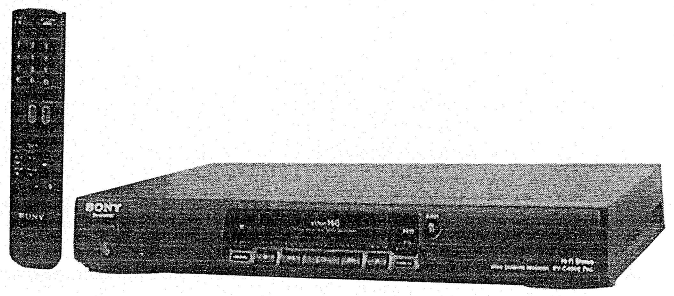
EV-C400E
RMT-V176

SERVICE MANUAL

AEP Model



video Hi8

F MECHANISM

> For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL V" (9-973-445-11).

SPECIFICATIONS

System

Format	8 mm video CCIR standard
Video signal	PAL color, CCIR standards
Tape speed	SP: Approx. 20.051 mm/s LP: Approx. 10.058 mm/s
Playback time	1 hr. 30 min, in SP mode (with E5/P5-90 tape) 3 hrs, in LP mode (with E5/P5-90 tape)
Fast-forward and rewind time	Approx. 2 min, 15 sec. 1 min. (High speed rewind) (with E5/P5-90)

Inputs and outputs

LINE IN	S VIDEO IN, 4-pin mini DIN (1) Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.3 Vp-p, 75 ohms, unbalanced VIDEO IN, Phono jack (1) Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO IN, Phono jack (2) Input level: −7.5 dBs (0 dBs=0.775 Vrms) Input impedance: more than 47 kilohms
LINE OUT 1	S VIDEO OUT, 4-pin mini DIN (1) Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.3 Vp-p, 75 ohms, unbalanced VIDEO OUT, Phono jack (1) Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO OUT, Phono jack (2) Rated output level: −7.5 dBs Load impedance: 47 kilohms Output impedance: less than 10 kilohms
LINE OUT 2	VIDEO OUT, Phono jack (1) Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO OUT, Phono jack (1) Rated output level: −7.5 dBs Load impedance: 47 kilohms Output impedance: less than 10 kilohms RFU DC OUT, Special mini-jack (1) 5 V DC

General

Power requirements	220–240 V AC, 50 Hz
Power consumption	9W
Operating temperature	5 ℃ to 40 ℃
Storage temperature	−20 ℃ to 60 ℃
Dimensions	Approx. 430 × 60 × 296 mm (w/h/d) including projecting parts and controls
Mass	Approx. 3.5 kg

Supplied accessories

Remote Commander (1)
Size AA (R6) batteries (2)
Audio/video cable (3 phono to 3 phono) (1)
S video cable (1)
VMC-91 plug adaptor (EURO-AV to 3 phono) (1)

Design and specifications are subject to change without notice.

MICROFILM

Hi8 VIDEO CASSETTE RECORDER

SONY®

TABLE OF CONTENTS

Section Title Page

1. SERVICE NOTE

1-1. Removal of Cassette at Failure with Cassette Inserted ········ 1-1
1-2. Replacement of External Parts ········ 1-1
1-3. Replacement of Cassette Door Assembly ········ 1-1
1-4. Cleaning of Video Head and Tape Path ········ 1-2
1-5. Replacement of Rotary Upper Drum ········ 1-2

2. GENERAL

Welcome! ········ 2-1
Table of Contents ········ 2-1
Setting up the Remote Commander ········ 2-1
Hookups ········ 2-2
Playing a Tape ········ 2-3
Editing with Another VCR ········ 2-3
Index to Parts and Controls ········ 2-4

3. DISASSEMBLY

3-1. Removal of upper Case and Front Panel Assembly ········ 3-1
3-2. Removal of RJ-60 and RJ-62 Boards ········ 3-1
3-3. Removal of VS-121 Board, Power Block and Mechanism Deck Assembly ········ 3-2
3-4. Removal of RP Frame ········ 3-2
3-5. Internal Views ········ 3-3
3-6. Circuit Boards Location ········ 3-4

Section Title Page

4. DIAGRAMS

4-1. Overall Block Diagram ········ 4-1
4-2. Video (1) Block Diagram ········ 4-5
4-3. Video (2) Block Diagram ········ 4-7
4-4. Servo Block Diagram ········ 4-9
4-5. System Control Block Diagram ········ 4-11
4-6. Audio Block Diagram ········ 4-13
4-7. Power Block Diagram ········ 4-15

5. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

5-1. Frame Schematic Diagram ········ 5-1
5-2. Printed Wiring Boards and Schematic Diagrams ········ 5-4
- RP-190 (HEAD AMP) Board ········ 5-5
- VS-121 (VIDEO, SERVO/SYSTEM CONTROL, AUDIO) Board ········ 5-12
- VS-121 (VIDEO (1)) Board ········ 5-17
- VS-121 (VIDEO (2)) Board ········ 5-22
- VS-121 (SERVO) Board ········ 5-25
- VS-121 (SYSTEM CONTROL) Board ········ 5-29
- VS-121 (AUDIO) Board ········ 5-31
- MD-59 (MECHA CONTROL) Board ········ 5-33
- RJ-60 (RFU OUT) Board ········ 5-36
- FC-57 (FUNCTION SWITCH, LED), FL-68 (POWER SWITCH, LED) Boards ········ 5-37
- RJ-62 (IN/OUT JACK) Board ········ 5-40
- POWER BLOCK (SR-655) (POWER) Board ········ 5-43

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Section Title Page

6. REPAIR PARTS LIST

6-1. EXPLODED VIEWS 6-1
- 6-1-1. Cabinet Assembly 6-1
- 6-1-2. FL Cassette Compartment Assembly 6-2
- 6-1-3. Mechanical Assembly (1) 6-3
- 6-1-4. Mechanical Assembly (2) 6-4
- 6-1-5. Mechanical Assembly (3) 6-5

6-2. ELECTRICAL PARTS LIST 6-6

7. INTERFACES, IC PIN FUNCTIONS

7-1. System Control – Video • Audio Block Interface (VS-121 Board) 7-1
7-2. Mechanical Control – Servo Block Interface (VS-121 Board) 7-1
7-3. Mechanical Control Microcomputer CXP87140-041Q (VS-121 Board IC602) Port Function Description 7-2
7-4. Mode Control Micro Computer MB89091PFV-G-104 (VS-121 Board IC500) Port Function Description 7-3

8. ADJUSTMENTS

8-1. MECHANICAL ADJUSTMENTS 8-1
1-1. Tape Path Adjustment 8-1
- 1-1-1. Setting the Track Shift Mode 8-1
- 1-1-2. Preparation before Adjustment 8-1

8-2. ELECTRICAL ADJUSTMENTS 8-2
2-1. Preparations Before Adjustments 8-2
- 2-1-1. Equipment Used 8-2
- 2-1-2. Connecting the Equipments 8-3
- 2-1-3. Checking the Input Signals 8-4
  - 1. For S VIDEO Input 8-4
  - 2. For VIDEO Input 8-4
- 2-1-4. Alignment Tape 8-5
- 2-1-5. Input/Output Level and Impedance 8-6

2-2. Service Mode 8-7
- 1. Senser Lanc 8-7
- 2. How to use the RM-95 Jig (Adjustment Remote Control) 8-7
- 3. How to Change the Service Mode with RM-95 8-7
- 4. SENSER LANC Memory Map 8-8
- 5. Test Mode Setting 8-9
- 6. Adjustment Mode Setting 8-9

2-3. Power Supply Check 8-9
- 2-3-1. Output Voltage Check (Power Supply Block) 8-9
- 2-3-2. Power Supply Block RV201 Adjusting Method 8-9

2-4. System Control System Adjustments 8-10
- 2-4-1. Clock Check (VS-121 Board) 8-10

2-5. Servo System Adjustments 8-10
- 2-5-1. PWM Frequency Check (VS-121 Board) 8-10
- 2-5-2. Switching Position Adjustment (VS-121 Board) 8-11
- 2-5-3. CAP DUTY Adjustment (VS-121 Board) 8-11

2-6. Video Adjustments 8-12
- 2-6-1. Playback Frequency Characteristics Adjustment (RP-190 Board) 8-12
- 2-6-2. E-E Level Adjustment (VS-121 Board) 8-13
- 2-6-3. Comb Filter Adjustment (VS-121 Board) 8-13
- 2-6-4. Emphasis Y Input Level Adjustment (VS-121 Board) 8-14
- 2-6-5. Standard 8 mm Mode Y FM Carrier Frequency Adjustment (VS-121 Board) 8-14
- 2-6-6. Standard 8 mm Mode Y FM Deviation Adjustment (VS-121 Board) 8-15
- 2-6-7. Hi8 Mode Y FM Carrier Frequency Adjustment (VS-121 Board) 8-15
- 2-6-8. Hi8 Mode Y FM Deviation Adjustment (VS-121 Board) 8-16
- 2-6-9. Chroma Emphasis Adjustment (VS-121 Board) 8-16
- 2-6-10. VIDEO Input Y Level Adjustment (VS-121 Board) 8-17
- 2-6-11. Playback CCD Input Level Adjustment (VS-121 Board) 8-17
- 2-6-12. Hi8 Mode Playback Y Level Adjustment (VS-121 Board) 8-18
- 2-6-13. Standard 8 mm Mode Playback Y Level Adjustment (VS-121 Board) 8-18
- 2-6-14. REC Y Level Adjustment (VS-121 Board) 8-19

2-7. AFM Audio System Adjustments 8-19
- 2-7-1. Carrier Frequency 1.5 MHz Check (VS-121 Board) 8-20
- 2-7-2. Carrier Frequency 1.7 MHz Check (VS-121 Board) 8-20
- 2-7-3. 1.5 MHz Deviation Adjustment (VS-121 Board) 8-20
- 2-7-4. 1.7 MHz Deviation Check (VS-121 Board) 8-20
- 2-7-5. Playback Separation 2 Adjustment (VS-121 Board) 8-21
- 2-7-6. Playback Separation 1 Check (VS-121 Board) 8-21
- 2-7-7. E-E Output Level Check (VS-121 Board) 8-21
- 2-7-8. Overall Frequency Characteristics Check (VS-121 Board) 8-21
- 2-7-9. Overall Distortion Check (VS-121 Board) 8-22
- 2-7-10. Overall Noise Level Check (VS-121 Board) 8-22

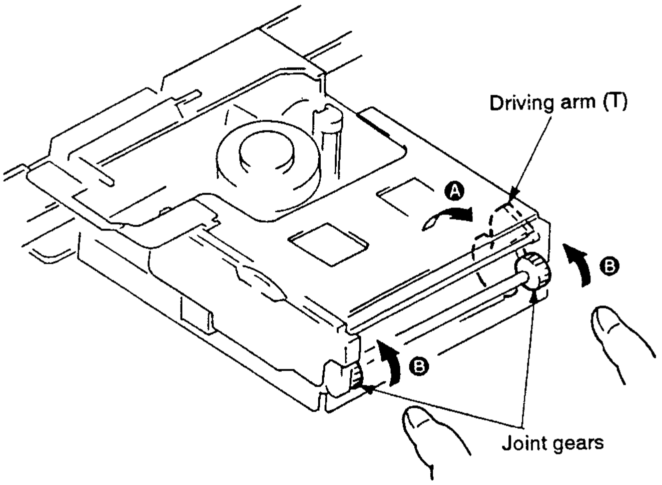
2-8. Arrangement Diagram for Adjustment parts 8-24

SECTION 1
SERVICE NOTE

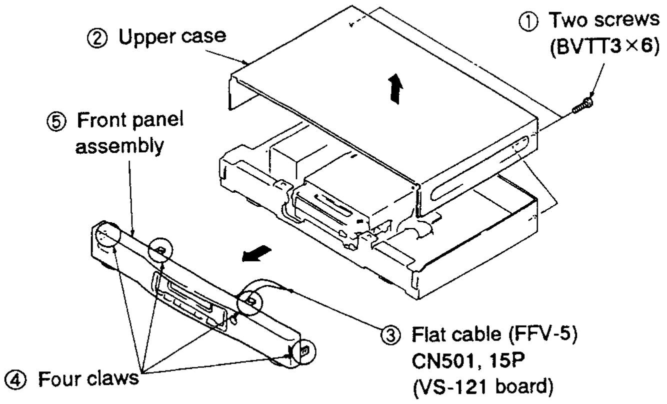
1-1. REMOVAL OF CASSETTE AT FAILURE WITH CASSETTE INSERTED

Ⓐ If tape is wounded on the drum and it cannot be removed: Rotate the capstan motor wheel in either direction and rotate the S or R reel to house the tape. Then, perform procedure Ⓑ.

Ⓑ If tape is housed in the cassette half and cannot be removed:
  ① Remove the MD block. (For removal, refer to Section 3-3.)
  ② Release the drive arm lock from the driving arm located the both side of the cassette compartment in the arrow direction 🅐.
  ③ Rotate the joint gears in the arrow direction 🅑 with both the thumbs.

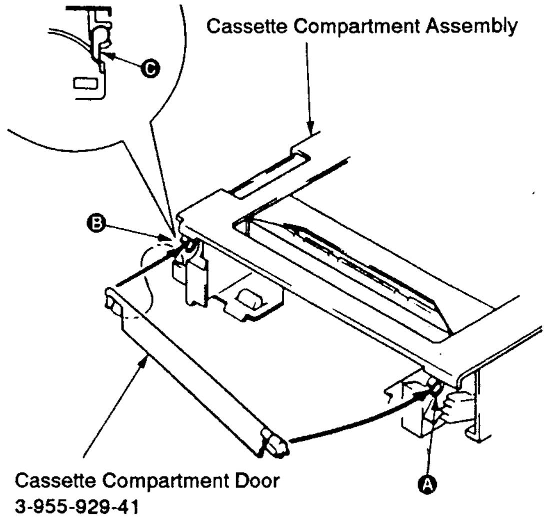

Driving arm (T)
🅐
🅑
🅑
Joint gears

1-2. REPLACEMENT OF EXTERNAL PARTS


② Upper case
① Two screws (BVTT3×6)
⑤ Front panel assembly
③ Flat cable (FFV-5) CN501, 15P (VS-121 board)
④ Four claws

1-3. REPLACEMENT OF CASSETTE DOOR ASSEMBLY

1) Remove the front panel.
2) First undo 🅐 portion toward you and then undo 🅑.


🅒
Cassette Compartment Assembly
🅑
Cassette Compartment Door
3-955-929-41
🅐

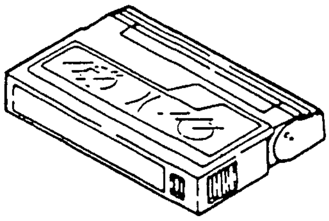
3) When installing, as shown above, first put in 🅑 portion by setting the claw 🅒. Then, put in 🅐 portion and install so that the door hangs almost vertically.

1-4. CLEANING OF VIDEO HEAD AND TAPE PATH

Method 1

[Cleaning Method with Cleaning Tape]

- A cleaning cassette should be used. (When using, the attached manual for the cleaning cassette should be thoroughly read.)



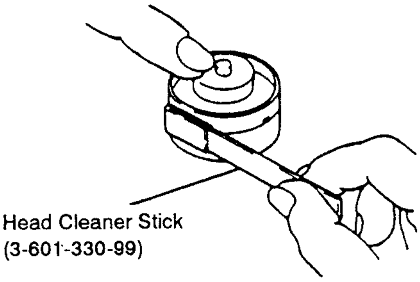
Method 2

[Cleaning Method with Cleaning Liquid]

① Remove the upper case of the video deck.

② Apply cleaning liquid to a head cleaner stick.

③ As shown in the right figure, press the head cleaner stick lightly. Turn the top of the rotary upper drum gradually and clean the video deck.


Head Cleaner Stick
(3-601-330-99)

[Cleaning Method for Tape Path]

① Apply cleaning liquid to a head cleaner stick.

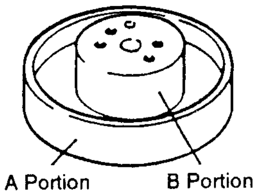
② Clean the guides which tape touches directly and the pinch roller with the head cleaner.

1-5. REPLACEMENT OF ROTARY UPPER DRUM

Method 3

Caution

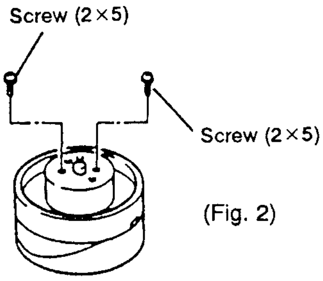
- Particular care must be taken when handling the video head and the terminals.
- When handling the rotary upper drum, do not touch the side (A portion) and hold the top (B portion) (See Fig. 1).


A Portion
B Portion

(Fig. 1)

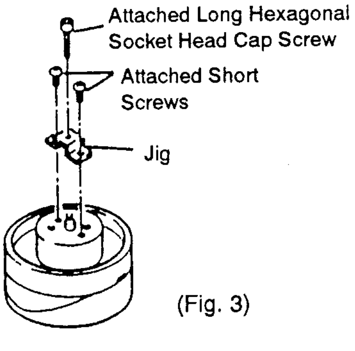
Removal of Rotary Upper Drum

① Remove two screws (2 × 5) (See Fig. 2).


Screw (2×5)
Screw (2×5)

(Fig. 2)

② Fix the jig (supplied with the spare rotary upper drum) with the two attached short screws. Then, put the attached long screw into the jig until the rotary upper drum may be removed (See Fig. 3).

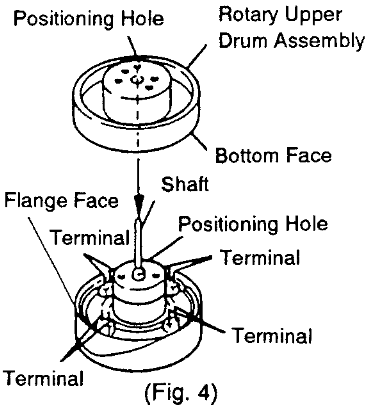

Attached Long Hexagonal Socket Head Cap Screw
Attached Short Screws
Jig

(Fig. 3)

Installation of New Rotary Upper Drum

① Clean the flange face and the bottom face of the new rotary upper drum (See Fig. 4).

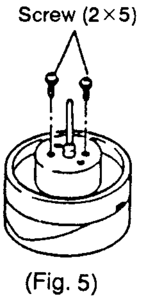
② Insert the shaft attached to the jig into the positioning hole in the lower drum. Then, put the shaft through the positioning hole in the new rotary upper drum and set the drum lightly.


Positioning Hole
Rotary Upper Drum Assembly
Bottom Face
Shaft
Flange Face
Positioning Hole
Terminal
Terminal
Terminal
Terminal

(Fig. 4)

③ With the shaft inserted into the positioning hole, push into the upper drum lightly with a hand. If the drum is not allowed to be bottomed, alternately tighten two screws (2 × 5) gradually and install the drum (See Fig. 5).

④ Pull out the shaft inserted. If the shaft is not allowed to be withdrawn smoothly, go back to Step ② and redo the procedure.



(Fig. 5)

⑤ Once the drum has been replaced, clean the video head and the tape path with a head cleaner stick (See "Cleaning Method 2 for Video Head and Tape Path).

SECTION 2
GENERAL

This section is extracted from instruction manual.

Welcome!

Thank you for purchasing the Sony Video Cassette Recorder (VCR).
Here are some of the features you'll enjoy with your VCR:

- Hi8 (High Eight) video system for quality playback of Hi8 tapes
- Large buttons for easy operation
- Dynamic hi-fi stereo sound

Note
- This VCR does not receive TV programmes, since it has neither aerial input nor built-in tuner.

Compatible colour systems

This VCR is designed to play back using the PAL colour system. Playback of video sources based on other colour systems cannot be guaranteed.

Compatible video systems

- This VCR uses the 8 mm video system and plays back in the SP mode (approximately 20.051 mm/s) and theLP mode (approximately 10.058 mm/s). The quality of the recorded picture in the LP mode, however, will not be as good as that in the SP mode. It can record only in the SP mode.
- This VCR plays back a tape recorded in the Hi8 or conventional 8 mm video system according to the system mode used in recording.
- PCM (Pulse Code Modulation) playback, that is, digital playback, is not possible with this unit. The PCM sound recorded on another VCR cannot be played back on this VCR.

Note
- This VCR does not receive TV programmes, since it has neither antenna input terminal nor built-in tuner. It can, however, record them through the line input jacks.

Table of contents

4 Setting up the remote commander
5 Hookups
7 Playing a tape
8 Editing with another VCR
10 Troubleshooting
11 Specifications

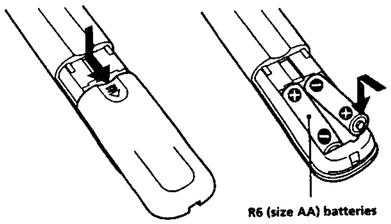
Back cover **Index to parts and controls**

Setting up the remote commander

Notes
- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

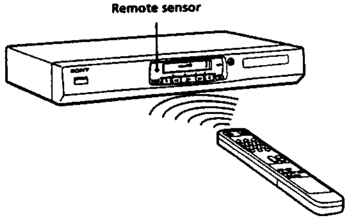
Inserting the batteries

Insert two R6 (size AA) batteries (supplied) by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the TV control area of the remote commander can be used to operate your TV.



Hookups

Before you can use your VCR for the first time, you need to connect it to your TV. This section explains how to hookup and set up your VCR so that you can start enjoying it right away.

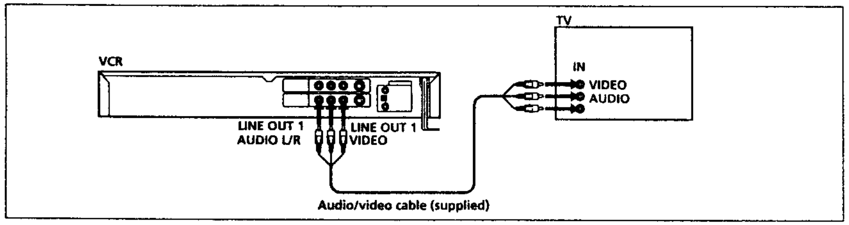
Before you get started

- Turn off the power to all equipment.
- Do not connect the mains lead until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified personnel.

Audio/video (AV) hookup

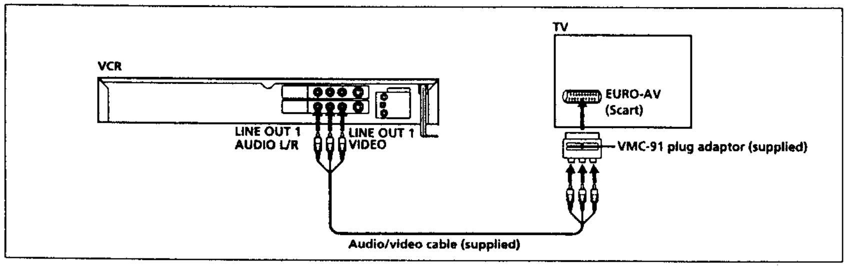
If your TV has audio/video (A/V) input jacks, or a EURO-AV (Scart) connector, you will get a better picture and sound if you hook up your VCR using these connections (hookup examples A or B below). If your TV has an S VIDEO input connector, the picture quality will be further improved (hookup example C on the next page). If your TV doesn't have A/V inputs, see the next page for RFU DC OUT hookup.

A Use this hookup if your TV has audio/video (A/V) input jacks


TV
VCR
IN
VIDEO
AUDIO
LINE OUT 1
AUDIO L/R
LINE OUT 1
VIDEO

Audio/video cable (supplied)

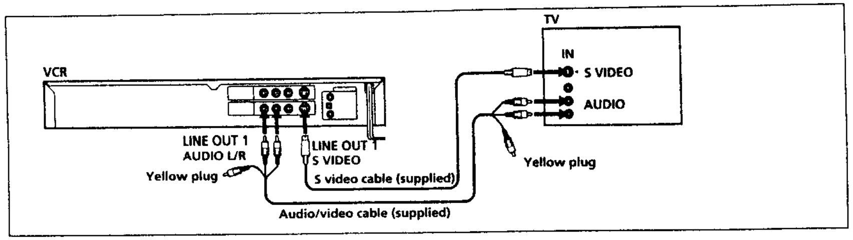
B Use this hookup if your TV has a EURO-AV (Scart) connector


TV
VCR
EURO-AV
(Scart)
LINE OUT 1
AUDIO L/R
LINE OUT 1
VIDEO
VMC-91 plug adaptor (supplied)

Audio/video cable (supplied)

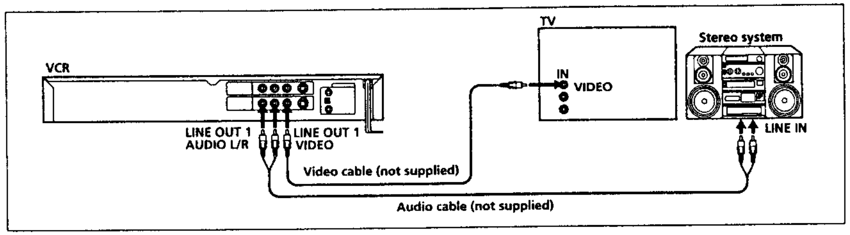
To view the playback picture through the above hookup
Select video input for this VCR on the connected TV.

C Use this hookup if your TV has an S VIDEO input connector


TV
IN
S VIDEO
AUDIO
VCR
LINE OUT 1
AUDIO L/R
LINE OUT 1
S VIDEO
Yellow plug
S video cable (supplied)
Yellow plug

Audio/video cable (supplied)

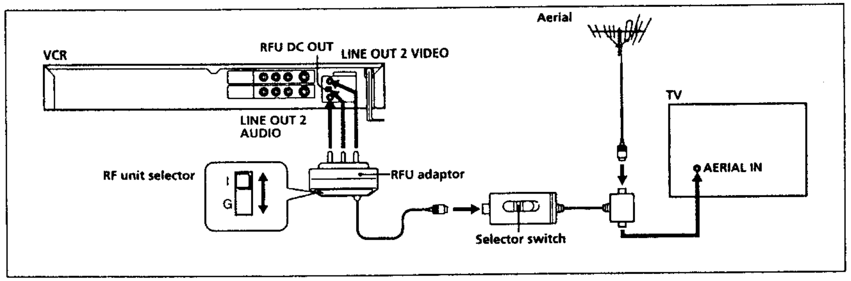
D Use this hookup if you want to connect the VCR to a stereo system


TV
Stereo system
VCR
IN
VIDEO
LINE IN
LINE OUT 1
AUDIO L/R
LINE OUT 1
VIDEO
Video cable (not supplied)

Audio cable (not supplied)

RFU DC OUT hookup

If your TV doesn't have audio/video (A/V) input jacks, or a EURO-AV connector, make an RFU DC OUT connection using an RFU kit (RFU-89EKA, not supplied). For this connection, refer to the instruction manual of the RFU kit as well.

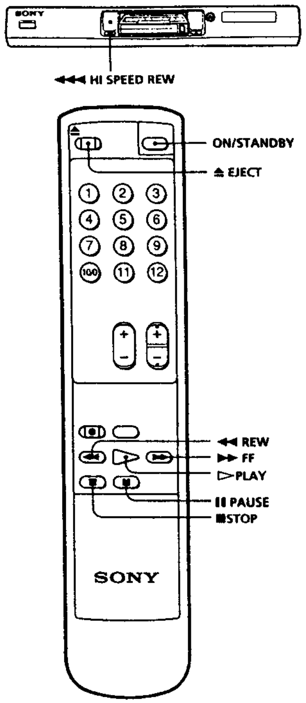

Aerial
VCR
RFU DC OUT
LINE OUT 2 VIDEO
TV
LINE OUT 2
AUDIO
AERIAL IN
RF unit selector
I
G
RFU adaptor
Selector switch

Note

- The sound you hear will be monaural even if you play back a stereo tape.

To view the playback picture through this hookup
Set the RF unit selector of the RFU adaptor to I or G according to the TV system of your country, set the selector switch to VTR, and select a programme position on the TV that is not used to receive a TV station.

Playing a tape


SONY
◀◀◀ HI SPEED REW
ON/STANDBY
≜ EJECT
1 2 3
4 5 6
7 8 9
100 11 12
+
−
◀◀ REW
▶▶ FF
▷PLAY
II PAUSE
■STOP
SONY

Notes

- Depending on the TV, there may be no colour in the search forward, search backward, or playback pause modes.
- If you use search forward or search backward in the LP mode, the picture may be difficult to view due to noise.

This section shows you how to play back a video tape.

1 **Turn on your TV and tune in to the VCR:**

- If the TV is connected to the VCR using the audio/video cable or EURO-AV cable, set the TV to video input.
- If the TV is connected to the VCR using the RFU kit, set the TV to the programme position for the VCR.

2 **Insert a tape.**
The VCR turns on automatically.
If an Hi8 tape is inserted, the Hi8 indicator lights up.

3 **Press ▷ PLAY to start playing.**
When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

To	Press	Indicator to light
Stop play	■ STOP	—
Pause play	II PAUSE	• PAUSE
Resume play after pause	II PAUSE or ▷ PLAY	• PLAY
Search forward	▶▶ FF during playback	• PLAY • FF
Search backward	◀◀ REW during playback	• REW • PLAY
Advance the tape rapidly	▶▶ FF during stop	• FF
Rewind the tape	◀◀ REW during stop	• REW
Rewind the tape at high speed	◀◀◀ HI SPEED REW on the VCR	—
Automatic playback after rewinding	▷ PLAY while pressing ◀◀ REW	• REW ✳ PLAY (• PLAY blinks)
Automatic playback after high speed rewinding	▷ PLAY while pressing ◀◀◀ HIGH SPEED REW	✳ PLAY (• PLAY blinks)
Eject the tape	≜ EJECT	(▣ disappears)
Turn off the power	ON/STANDBY	(Indicator turns from green to red)

Editing with another VCR

Tips

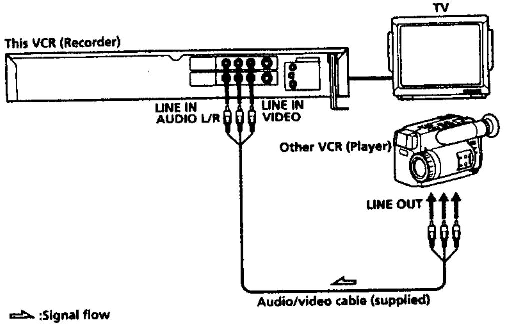
- Make sure you connect the plugs to jacks of the same colour.
- If the other VCR is a monaural type, leave the red plugs unconnected.
- If the VCR has an S VIDEO OUT connector, connect the VCR using the S video cable. Leave the yellow plugs of the supplied A/V cable unconnected.
- If the VCR has a EURO-AV (Scart) connector, connect the VCR using the supplied VMC-91 plug adaptor.

Note

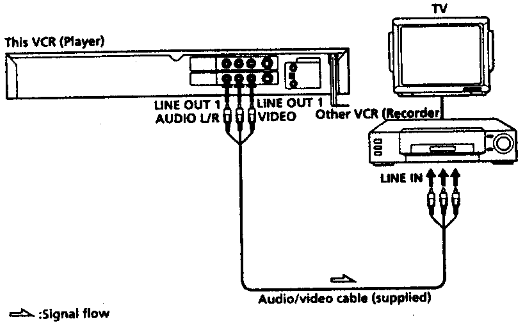
- When connecting the VCRs, do not simultaneously connect the EURO-AV connector and LINE OUT jacks on your VCR.
 A humming noise may occur if you do this.

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recording or playback.

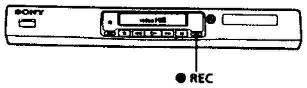
How to hook up to record on this VCR


TV
This VCR (Recorder)
LINE IN AUDIO L/R
LINE IN VIDEO
Other VCR (Player)
LINE OUT
Audio/video cable (supplied)
:Signal flow

How to hook up to record to another VCR


TV
This VCR (Player)
LINE OUT 1 AUDIO L/R
LINE OUT 1 VIDEO
Other VCR (Recorder)
LINE IN
Audio/video cable (supplied)
:Signal flow

Operation (when recording on this VCR)



1 **Insert a source tape with its safety tab removed into the other (playback) VCR.**

2 **Insert a tape into this (recording) VCR.**

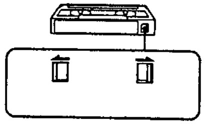
3 **To start editing, start playback on the other VCR and press ● REC on this VCR simultaneously.**
The recording indicator (●) on this VCR lights up.

To stop editing
Press the ■ STOP buttons on both VCRs.

Saving a recording

Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, slide out the tab on the back of the cassette so that the red colour is visible. A tape with its red safety tab visible is ejected if you try to record on it.

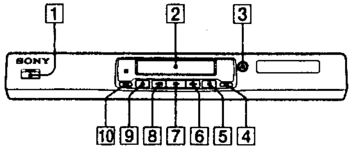
To record on the tape, slide the tab back.



Index to parts and controls

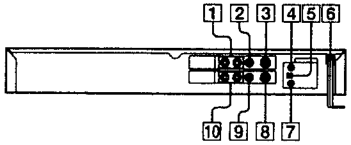
Refer to the pages indicated in ( ) for details.

Front panel



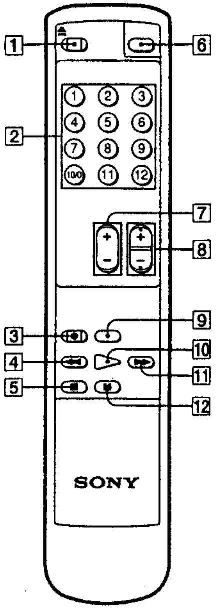
1 ON/STANDBY switch/indicator
2 Tape compartment
3 ⏏ EJECT button
4 ● REC (recording) button (9)
5 ❚❚ PAUSE button
6 ▶▶ FF (fast-forward) button
7 ▷ PLAY button
8 ◀◀ REW (rewind) button
9 ■ STOP button
10 ◀◀◀HI SPEED REW (high speed rewind) button (7)

Rear panel



1 LINE IN AUDIO L/R jacks (8)
2 LINE IN VIDEO jack (8)
3 LINE IN S VIDEO connector
4 LINE OUT 2 VIDEO jack (6)
5 LINE OUT 2 RFU DC OUT jack (6)
6 Mains lead
7 LINE OUT 2 AUDIO jack (6)
8 LINE OUT 1 S VIDEO connector (6)
9 LINE OUT 1 VIDEO jack (5, 6)
10 LINE OUT 1 AUDIO L/R jacks (5, 6)

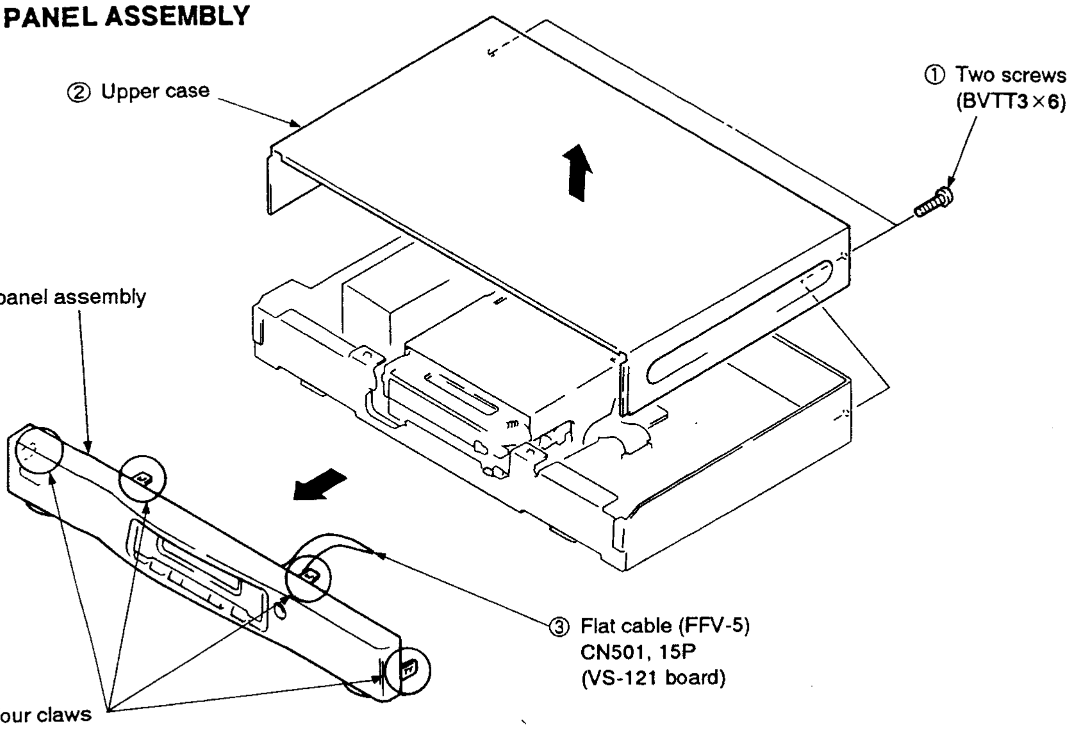
Remote commander



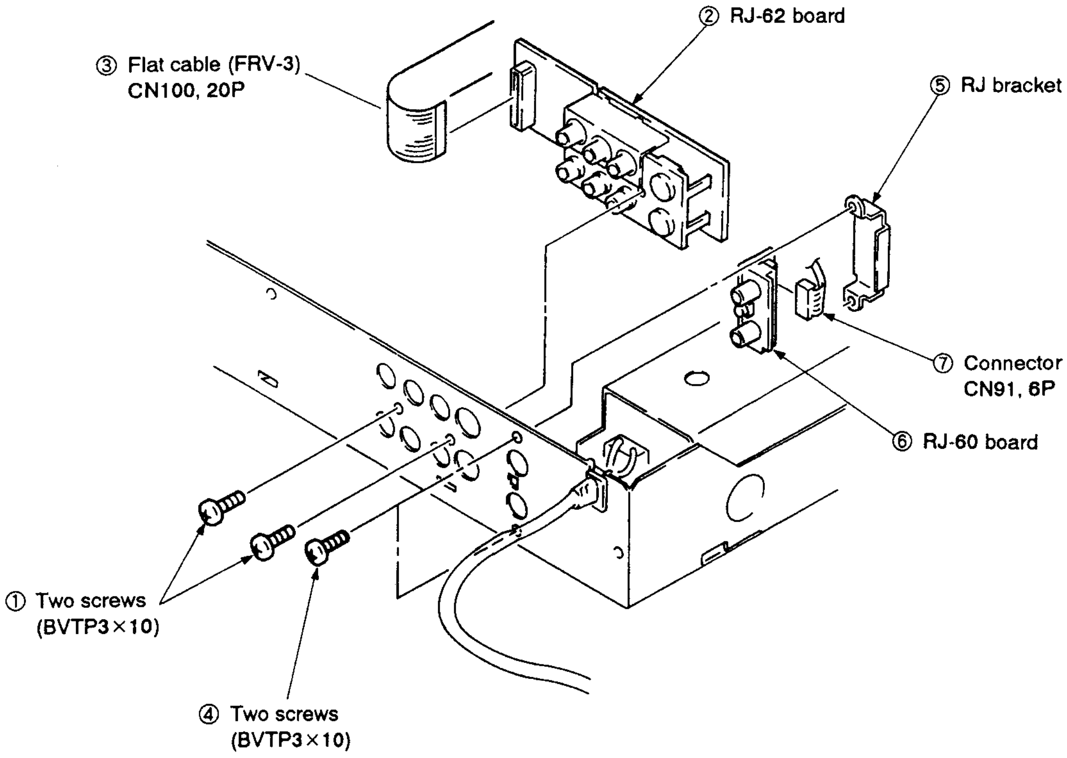
1 ⏏ EJECT button (7)
2 Programme number buttons
3 ● REC (recording) button (9)
4 ◀◀ REW (rewind) button (7)
5 ■ STOP button (7)
6 ON/STANDBY button (7)
7 VOL (volume) +/– button
8 PROGR (programme) +/– button
9 COUNTER RESET button
10 ▷ PLAY button (7)
11 ▶▶ FF (fast-forward) button (7)
12 ❚❚ PAUSE button (7)

SECTION 3
DISASSEMBLY

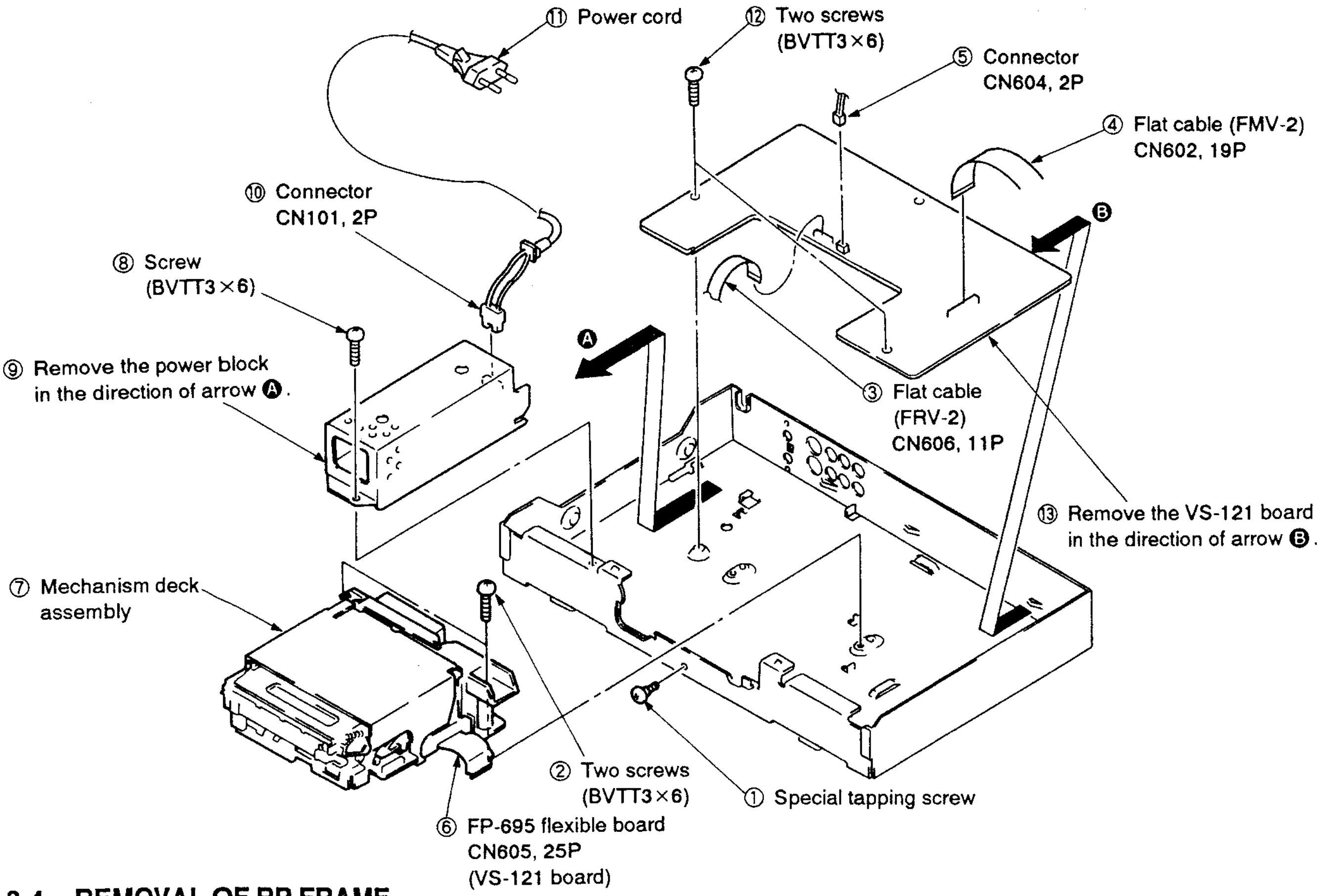
3-1. REMOVAL OF UPPER CASE AND FRONT PANEL ASSEMBLY


② Upper case
① Two screws
(BVTT3×6)
⑤ Front panel assembly
③ Flat cable (FFV-5)
CN501, 15P
(VS-121 board)
④ Four claws

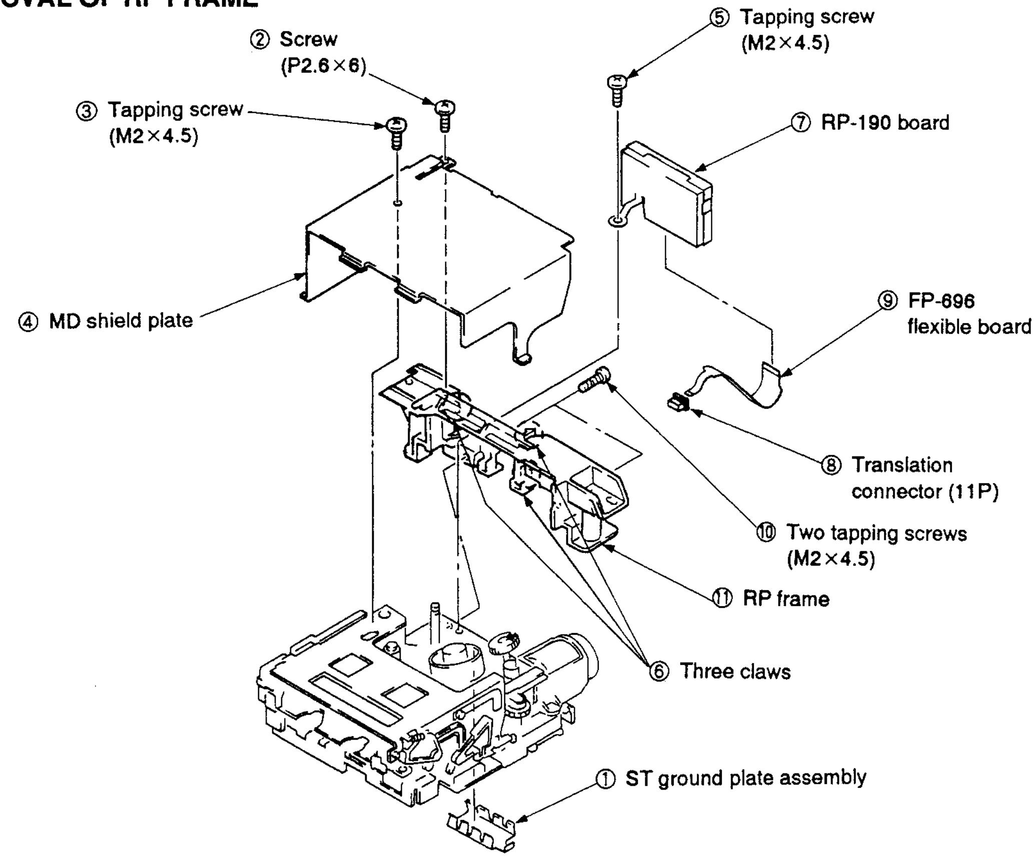
3-2. REMOVAL OF RJ-60 AND RJ-62 BOARDS


② RJ-62 board
③ Flat cable (FRV-3)
CN100, 20P
⑤ RJ bracket
⑦ Connector
CN91, 6P
⑥ RJ-60 board
① Two screws
(BVTP3×10)
④ Two screws
(BVTP3×10)

3-3. REMOVAL OF VS-121 BOARD, POWER BLOCK AND MECHANISM DECK ASSEMBLY


⑪ Power cord
⑫ Two screws (BVTT3×6)
⑤ Connector CN604, 2P
④ Flat cable (FMV-2) CN602, 19P
Ⓑ
⑩ Connector CN101, 2P
⑧ Screw (BVTT3×6)
Ⓐ
⑨ Remove the power block in the direction of arrow Ⓐ.
③ Flat cable (FRV-2) CN606, 11P
⑬ Remove the VS-121 board in the direction of arrow Ⓑ.
⑦ Mechanism deck assembly
② Two screws (BVTT3×6)
① Special tapping screw
⑥ FP-695 flexible board CN605, 25P (VS-121 board)

3-4. REMOVAL OF RP FRAME

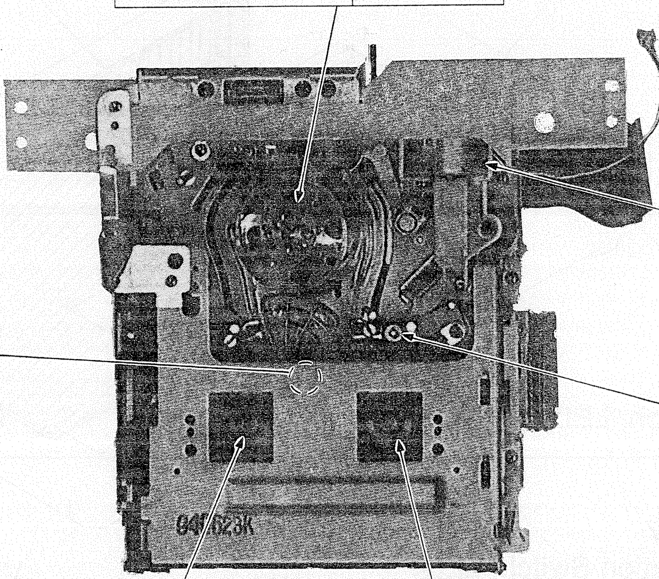

⑤ Tapping screw (M2×4.5)
② Screw (P2.6×6)
③ Tapping screw (M2×4.5)
⑦ RP-190 board
④ MD shield plate
⑨ FP-696 flexible board
⑧ Translation connector (11P)
⑩ Two tapping screws (M2×4.5)
⑪ RP frame
⑥ Three claws
① ST ground plate assembly

3-5. INTERNAL VIEWS

— Top Side —

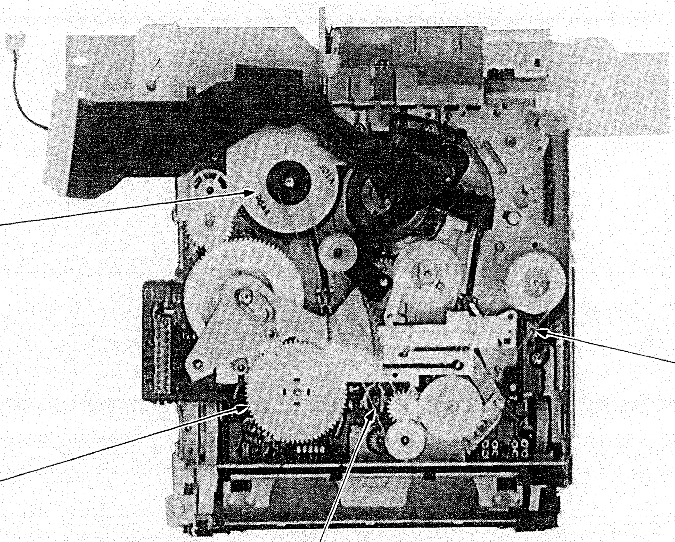
M901

Drum assembly (DGU-0B8A-R)	A-7048-787-A
Upper drum assembly (DGR-0B8-R)	A-7049-660-A



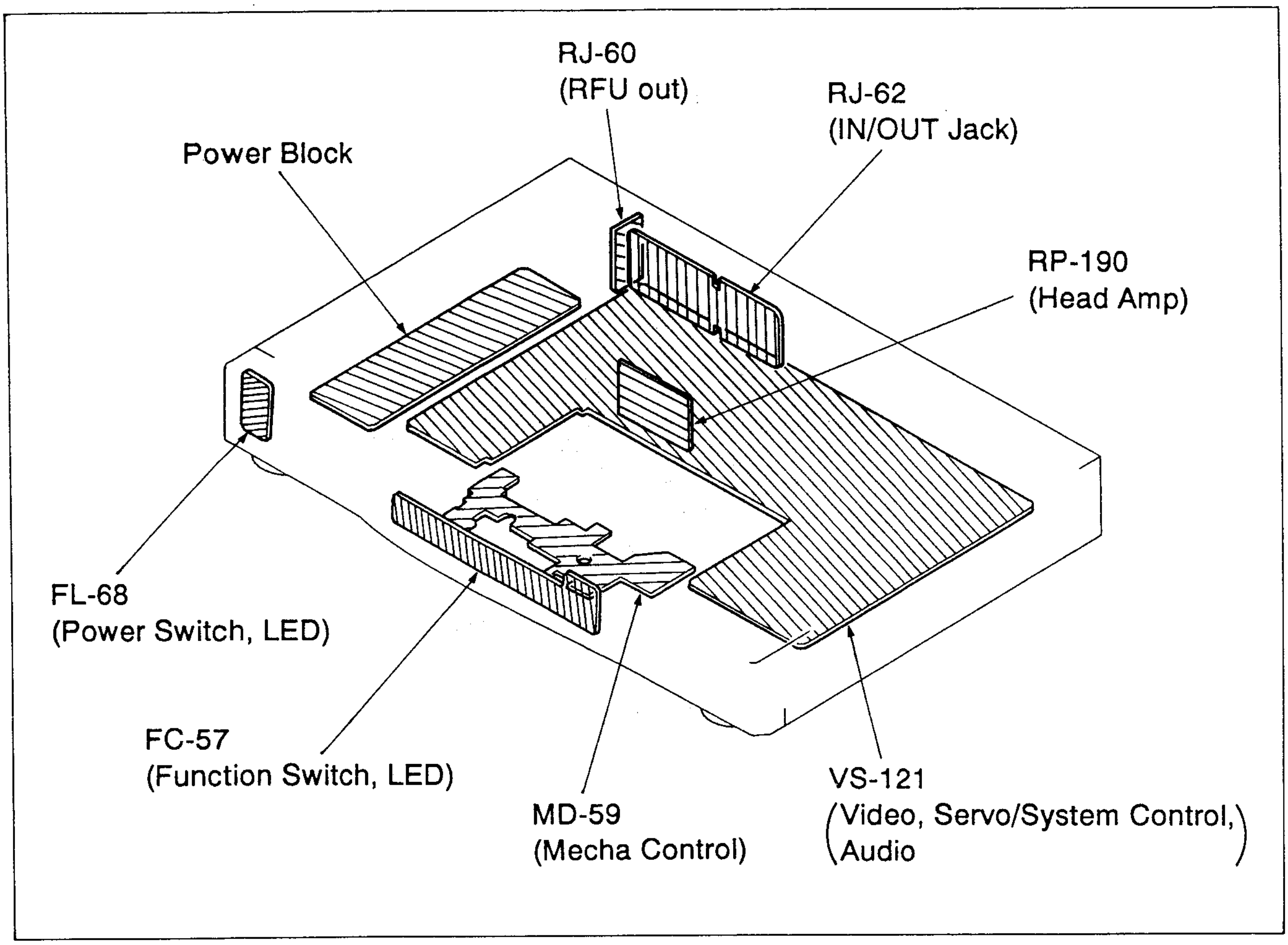
M903
Cam motor assembly
(Loading)
X-3942-946-1
D001
TAPE TOP/TAPE END LED
Pinch arm assembly
X-3942-945-1
Reel table (S) assembly
X-3942-954-1
Reel table (T) assembly
X-3942-953-2

— Bottom Side —



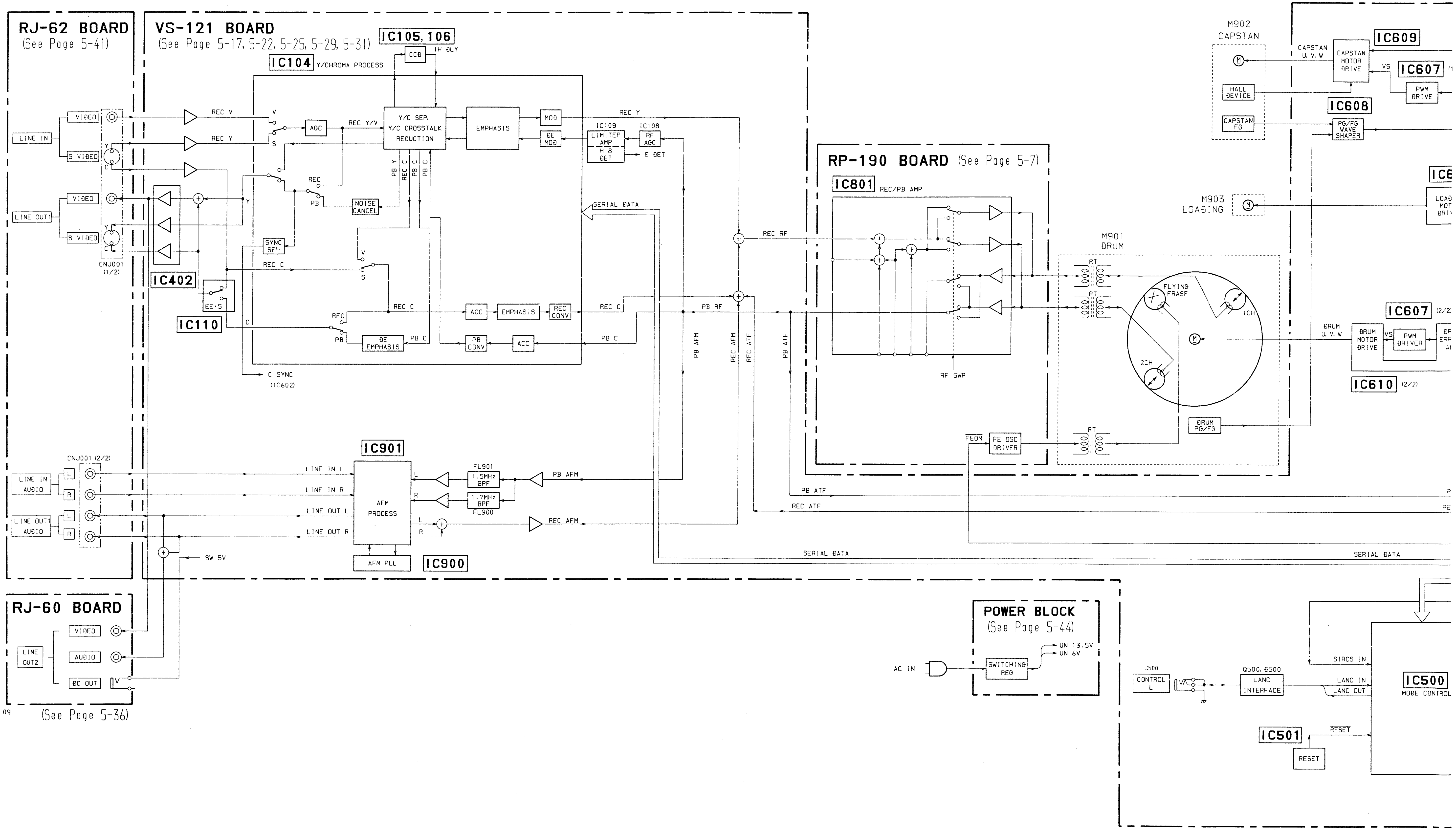
M902
Capstan motor
8-835-499-01
Timing belt (FL)
3-954-079-01
S901
Rotary switch
1-692-498-11
Timing belt
3-953-986-01

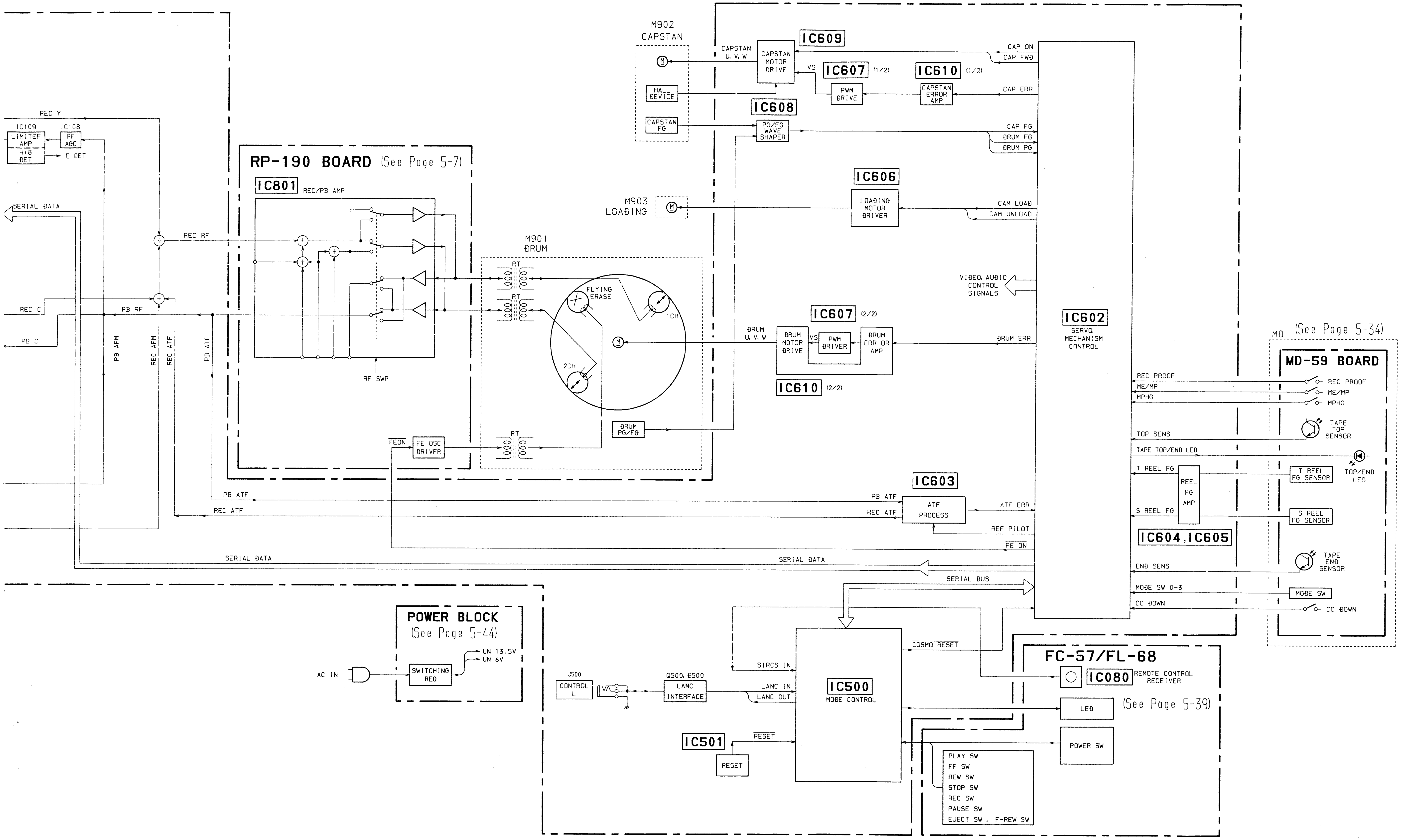
3-6. CIRCUIT BOARDS LOCATION


RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

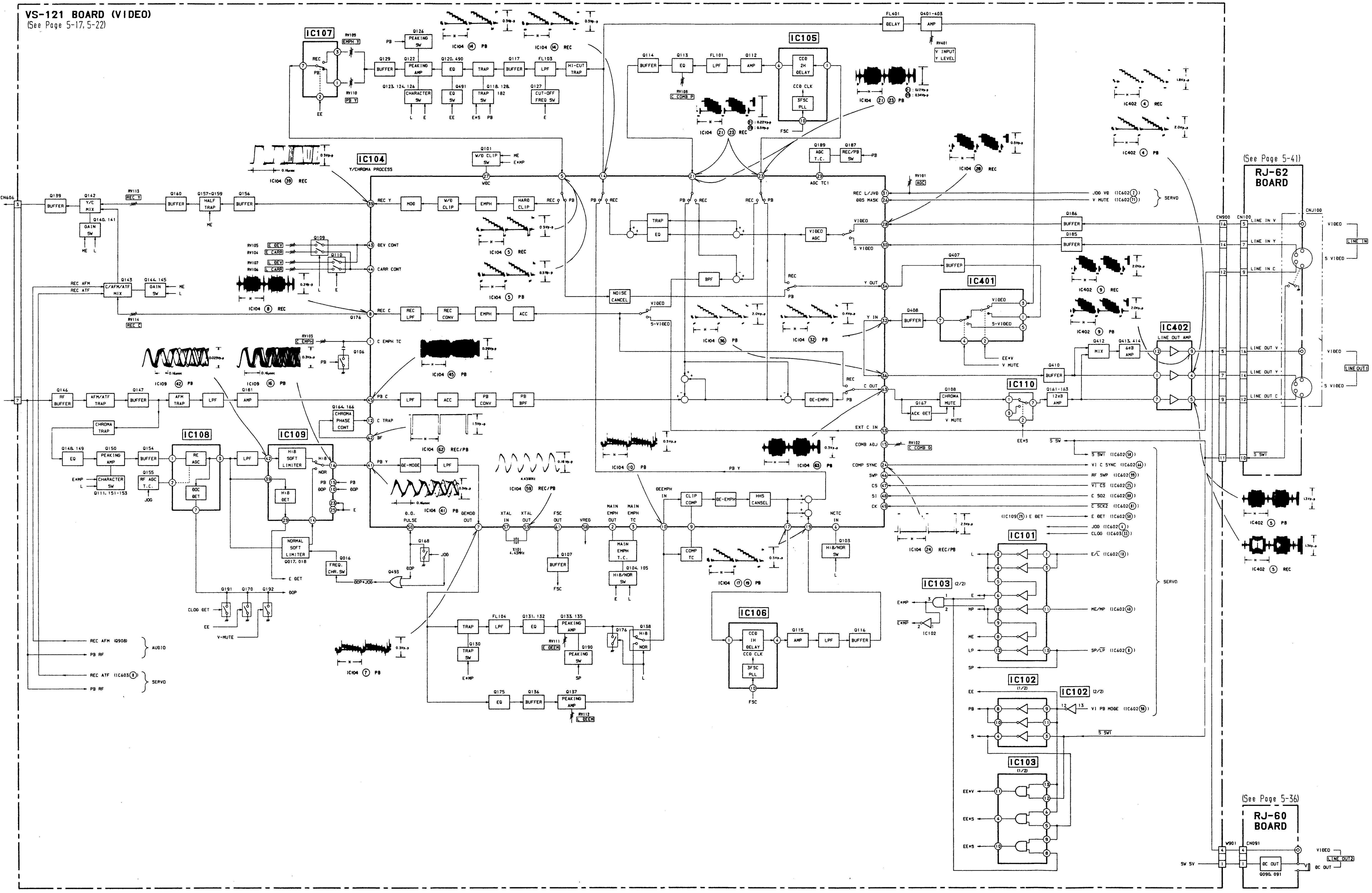
SECTION 4
DIAGRAMS

4-1. OVERALL BLOCK DIAGRAM

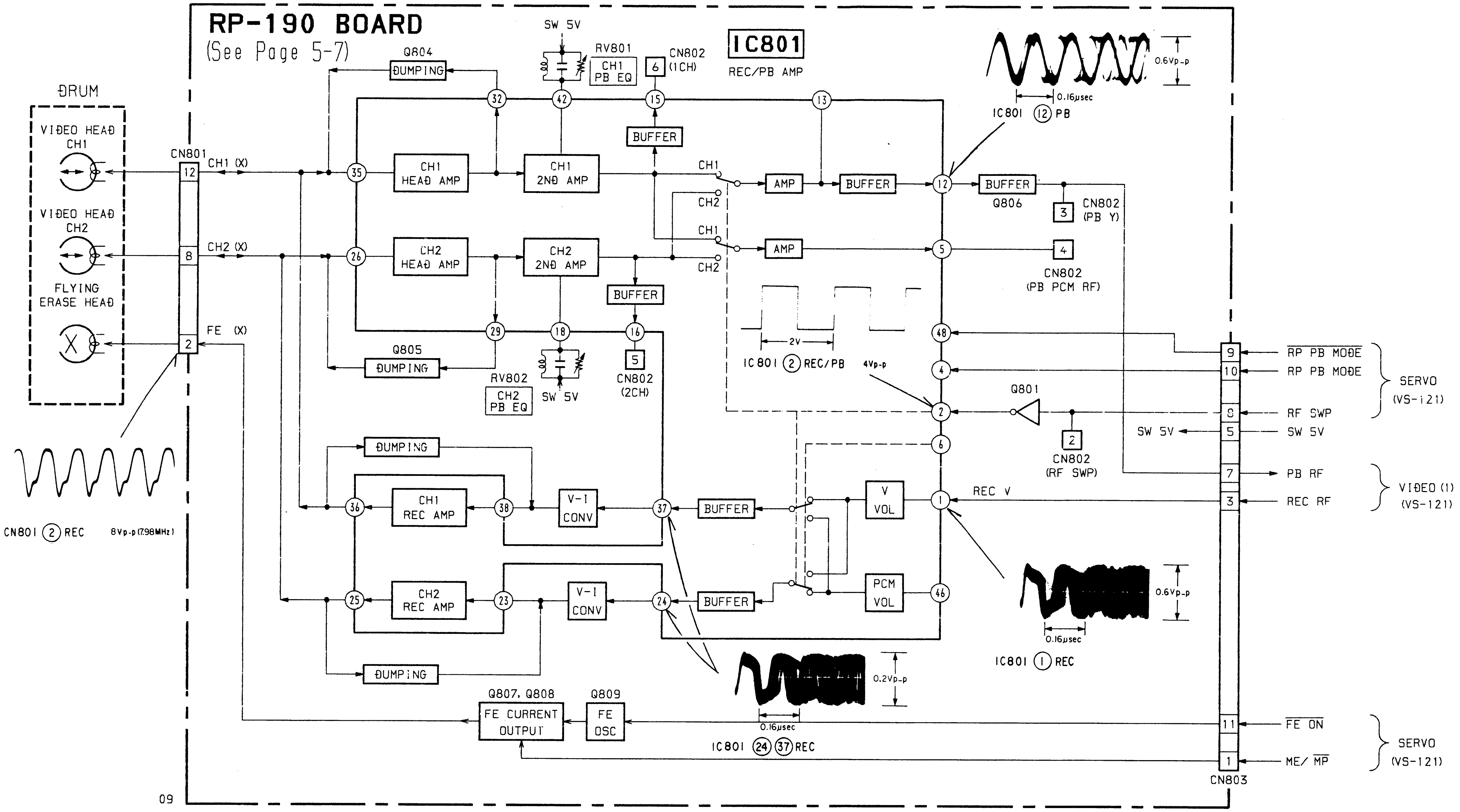

RJ-62 BOARD
(See Page 5-41)
VS-121 BOARD
(See Page 5-17, 5-22, 5-25, 5-29, 5-31)
IC105, 106
CCD
1H DLY
IC104 Y/CHROMA PROCESS
LINE IN
VIDEO
S VIDEO
LINE OUT
CNJ001 (1/2)
REC V
REC Y
AGC
REC Y/V
Y/C SEP. Y/C CROSSTALK REDUCTION
EMPHASIS
MOD
DE MOD
REC Y
IC109
LIMITER AMP
HI8 DET
IC108
RF AGC
E DET
NOISE CANCEL
SYNC SEP
REC
PB
PB Y
REC C
PB C
SERIAL DATA
IC402
IC110
EE·S
REC C
ACC
EMPHASIS
REC CONV
DE EMPHASIS
PB CONV
PB C
C SYNC (IC602)
REC RF
PB RF
PB AFM
REC AFM
REC ATF
PB ATF
RP-190 BOARD (See Page 5-7)
IC801 REC/PB AMP
RF SWP
M901 DRUM
RT
FLYING ERASE
1CH
2CH
FEON
FE OSC DRIVER
DRUM PG/FG
CNJ001 (2/2)
LINE IN AUDIO
LINE OUT1 AUDIO
L
R
LINE IN L
LINE IN R
LINE OUT L
LINE OUT R
IC901
AFM PROCESS
FL901 1.5MHz BPF
1.7MHz BPF FL900
PB AFM
REC AFM
AFM PLL
IC900
SW 5V
SERIAL DATA
RJ-60 BOARD
VIDEO
AUDIO
DC OUT
LINE OUT2
(See Page 5-36)
09
M902 CAPSTAN
HALL DEVICE
CAPSTAN FG
CAPSTAN U, V, W
CAPSTAN MOTOR DRIVE
IC609
VS
IC607
PWM DRIVE
IC608
PG/FG WAVE SHAPER
M903 LOADING
DRUM U, V, W
DRUM MOTOR DRIVE
PWM DRIVER
IC607 (2/2)
IC610 (2/2)
POWER BLOCK
(See Page 5-44)
AC IN
SWITCHING REG
UN 13.5V
UN 6V
J500
CONTROL L
Q500, D500
LANC INTERFACE
SIRCS IN
LANC IN
LANC OUT
IC500
MODE CONTROL
IC501
RESET


M902
CAPSTAN
HALL DEVICE
CAPSTAN FG
CAPSTAN U, V, W
CAPSTAN MOTOR DRIVE
IC609
VS
IC607 (1/2)
PWM DRIVE
IC610 (1/2)
CAPSTAN ERROR AMP
CAP ON
CAP FWD
CAP ERR
IC608
PG/FG WAVE SHAPER
CAP FG
DRUM FG
DRUM PG
IC606
LOADING MOTOR DRIVER
M903
LOADING
CAM LOAD
CAM UNLOAD
VIDEO, AUDIO CONTROL SIGNALS
REC Y
IC109
LIMITER AMP
HI8 DET
IC108
RF AGC
E DET
SERIAL DATA
RP-190 BOARD (See Page 5-7)
IC801
REC/PB AMP
REC RF
REC C
PB RF
PB C
PB AFM
REC AFM
REC ATF
PB ATF
RF SWP
M901
DRUM
RT
FLYING ERASE
1CH
2CH
DRUM PG/FG
FEON
FE OSC DRIVER
DRUM U, V, W
DRUM MOTOR DRIVE
VS
PWM DRIVER
DRUM ERR OR AMP
IC607 (2/2)
IC610 (2/2)
DRUM ERR
IC602
SERVO, MECHANISM CONTROL
MD (See Page 5-34)
MD-59 BOARD
REC PROOF
ME/MP
MPHG
TAPE TOP SENSOR
TOP SENS
TAPE TOP/END LED
TOP/END LED
T REEL FG
T REEL FG SENSOR
REEL FG AMP
S REEL FG
S REEL FG SENSOR
IC604, IC605
TAPE END SENSOR
END SENS
MODE SW 0-3
MODE SW
CC DOWN
IC603
ATF PROCESS
PB ATF
REC ATF
ATF ERR
REF PILOT
FE ON
SERIAL DATA
SERIAL BUS
POWER BLOCK (See Page 5-44)
AC IN
SWITCHING REG
UN 13.5V
UN 6V
J500
CONTROL L
Q500, D500
LANC INTERFACE
LANC IN
LANC OUT
SIRCS IN
COSMO RESET
IC500
MODE CONTROL
IC501
RESET
RESET
FC-57/FL-68
IC080
REMOTE CONTROL RECEIVER
LED
(See Page 5-39)
POWER SW
PLAY SW
FF SW
REW SW
STOP SW
REC SW
PAUSE SW
EJECT SW , F-REW SW

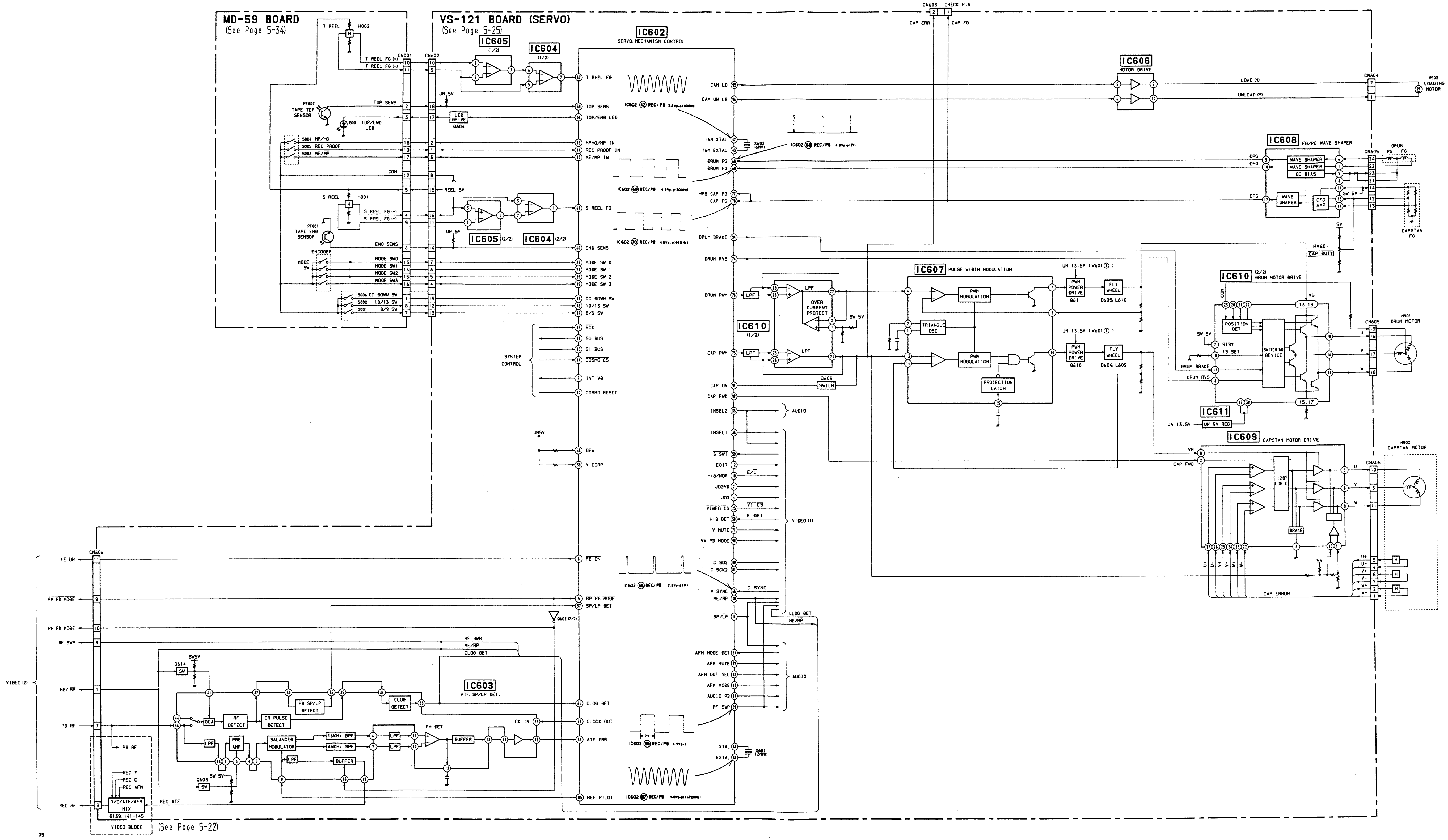
4-2. VIDEO (1) BLOCK DIAGRAM


VS-121 BOARD (VIDEO)
(See Page 5-17, 5-22)
IC107
IC104
Y/CHROMA PROCESS
IC105
IC108
IC109
IC106
IC401
IC402
LINE OUT AMP
IC110
IC101
IC102
IC103
(See Page 5-41)
RJ-62 BOARD
(See Page 5-36)
RJ-60 BOARD
CN606
REC RF
PB RF
VIDEO (2) (RP-190)
BUFFER
Y/C MIX
HALF TRAP
GAIN SW
C/AFM/ATF MIX
RF BUFFER
AFM/ATF TRAP
AFM TRAP
LPF
AMP
CHROMA TRAP
EQ
PEAKING AMP
CHARACTER SW
RF AGC T.C.
RF AGC
DOC DET
Hi8 SOFT LIMITER
Hi8 DET
NORMAL SOFT LIMITER
FREQ. CHR. SW
CHROMA PHASE CONT
PEAKING SW
HI-CUT TRAP
CUT-OFF FREQ SW
TRAP SW
W/D CLIP SW
MOD
W/D CLIP
EMPH
HARD CLIP
REC LPF
REC CONV
ACC
PB CONV
PB BPF
DE-MODE
NOISE CANCEL
VIDEO AGC
BPF
DE-EMPH
CLIP COMP
MHS CANSEL
COMP TC
MAIN EMPH T.C.
Hi8/NOR SW
CCD 2H DELAY
CCD CLK
3FSC PLL
CCD 1H DELAY
AGC T.C.
REC/PB SW
DELAY
V INPUT Y LEVEL
ACK DET
CHROMA MUTE
12dB AMP
6dB AMP
MIX
FL401
Q401-403
CN900
CN100
CNJ100
LINE IN V
LINE IN Y
LINE IN C
LINE OUT V
LINE OUT Y
LINE OUT C
S SW1
VIDEO
LINE IN
S VIDEO
LINE OUT1
LINE OUT2
DC OUT
W901
CN091
Q090, 091
REC AFM (Q908)
PB RF
AUDIO
REC ATF (IC603③)
SERVO
JOG V0 (IC602⑦)
V MUTE (IC602⑪)
E/C (IC602⑬)
ME/MP (IC602④)
SP/LP (IC602⑤)
V1 PB MODE (IC602㊿)

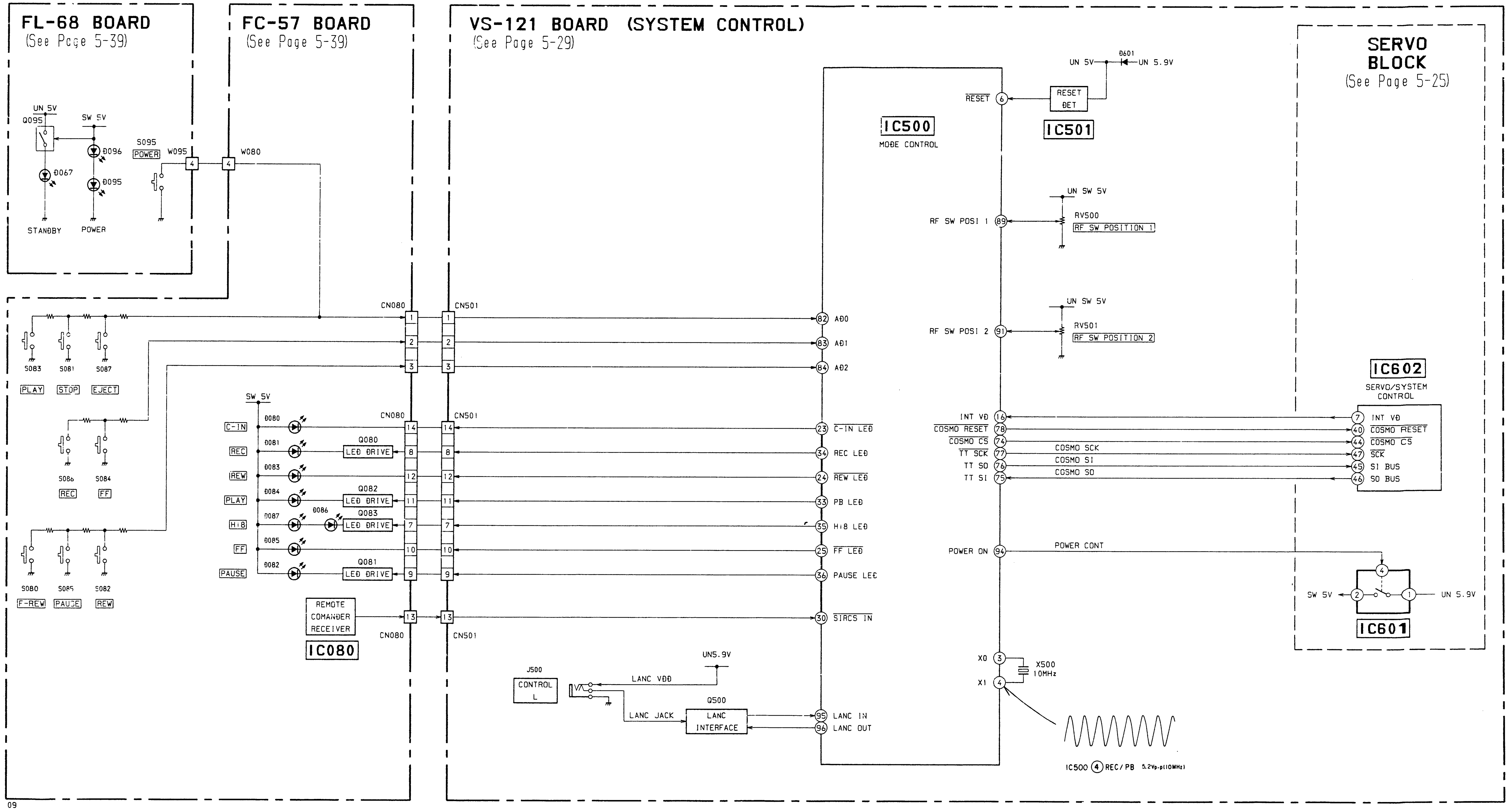
4-3. VIDEO (2) BLOCK DIAGRAM


RP-190 BOARD
(See Page 5-7)
DRUM
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE HEAD
CN801
CH1 (X)
CH2 (X)
FE (X)
CN801 ② REC 8Vp-p(7.98MHz)
Q804
DUMPING
SW 5V
RV801
CH1 PB EQ
CN802 (1CH)
IC801
REC/PB AMP
BUFFER
CH1 HEAD AMP
CH1 2ND AMP
CH2 HEAD AMP
CH2 2ND AMP
Q805
RV802
CH2 PB EQ
CN802 (2CH)
AMP
Q806
CN802 (PB Y)
CN802 (PB PCM RF)
IC801 ⑫ PB
0.6Vp-p
0.16μsec
2V
IC801 ② REC/PB 4Vp-p
Q801
CN802 (RF SWP)
CH1 REC AMP
CH2 REC AMP
V-I CONV
V VOL
PCM VOL
REC V
IC801 ① REC
0.2Vp-p
IC801 ㉔ ㊲ REC
Q807, Q808
FE CURRENT OUTPUT
Q809
FE OSC
RP PB MODE
RF SWP
SW 5V
SERVO (VS-121)
PB RF
REC RF
VIDEO (1) (VS-121)
FE ON
ME/ MP
CN803
09

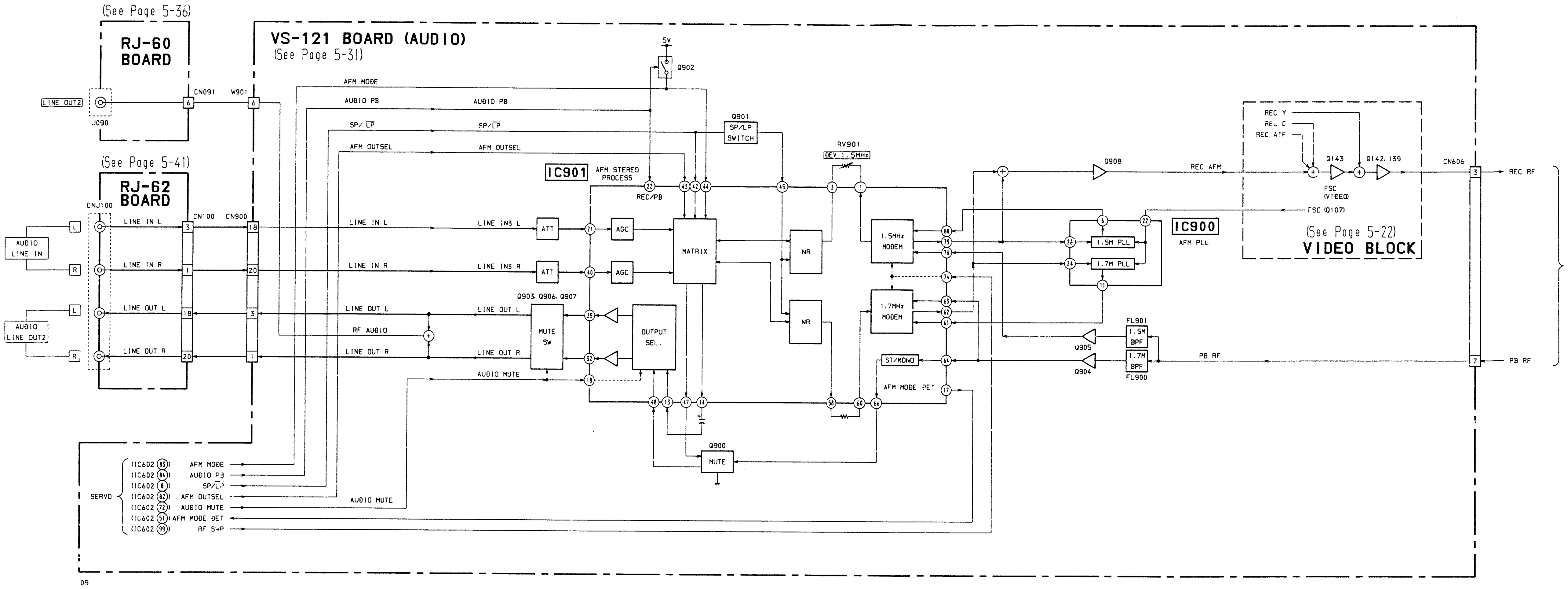
4-4. SERVO BLOCK DIAGRAM


MD-59 BOARD
(See Page 5-34)
VS-121 BOARD (SERVO)
(See Page 5-25)
T REEL
H002
T REEL FG (+)
T REEL FG (-)
CN001
CN602
IC605 (1/2)
IC604 (1/2)
PT002 TAPE TOP SENSOR
TOP SENS
D001 TOP/END LED
UN 5V
LED DRIVE
Q604
S004 MP/HG
S005 REC PROOF
S003 ME/MP
COM
REEL 5V
S REEL
H001
S REEL FG (-)
S REEL FG (+)
PT001 TAPE END SENSOR
END SENS
IC605 (2/2)
IC604 (2/2)
ENCODER
MODE SW
MODE SW0
MODE SW1
MODE SW2
MODE SW3
S006 CC DOWN SW
S002 10/13 SW
S001 8/9 SW
IC602
SERVO MECHANISM CONTROL
T REEL FG
TOP SENS
TOP/END LED
MPHG/MP IN
REC PROOF IN
ME/MP IN
S REEL FG
END SENS
MODE SW 0
MODE SW 1
MODE SW 2
MODE SW 3
CC DOWN SW
10/13 SW
8/9 SW
SCK
SO BUS
SI BUS
COSMO CS
INT VD
COSMO RESET
SYSTEM CONTROL
UN5V
DEW
Y CORP
IC602 (42) REC/PB 3.8Vp-p(16MHz)
IC602 (68) REC/PB 4.9Vp-p(2V)
IC602 (69) REC/PB 4.9Vp-p(300Hz)
IC602 (70) REC/PB 4.9Vp-p(940Hz)
IC602 (66) REC/PB 2.5Vp-p(H)
IC602 (99) REC/PB 4.9Vp-p
2V
IC602 (87) REC/PB 4.8Vp-p(12MHz)
CAM LD
CAM UN LD
16M XTAL
16M EXTAL
X602 16MHz
DRUM PG
DRUM FG
HMS CAP FG
CAP FG
DRUM BRAKE
DRUM RVS
DRUM PWM
LPF
OVER CURRENT PROTECT
SW 5V
IC610 (1/2)
CAP PWM
Q609
SWICH
CAP ON
CAP FWD
INSEL2
AUDIO
INSEL1
S SWI
EDIT
H18/NOR
E/L
JOGVD
JOG
VIDEO CS
VI CS
H18 DET
E DET
V MUTE
VA PB MODE
VIDEO (1)
C SO2
C SCK2
V SYNC
C SYNC
ME/MP
SP/LP
CLOG DET
AFM MODE DET
AFM MUTE
AFM OUT SEL
AFM MODE
AUDIO PB
RF SWP
XTAL
EXTAL
X601 12MHz
CN603 CHECK PIN
CAP ERR
CAP FG
IC606
MOTOR DRIVE
LOAD (M)
UNLOAD (M)
CN604
M903 LOADING MOTOR
IC608 FG/PG WAVE SHAPER
DPG
DFG
WAVE SHAPER
DC BIAS
CFG
CFG AMP
CN605
DRUM PG FG
CAPSTAN FG
5V
RV601
CAP DUTY
IC607 PULSE WIDTH MODULATION
TRIANGLE OSC
PWM MODULATION
PROTECTION LATCH
UN 13.5V (W601①)
PWM POWER DRIVE
Q611
Q610
FLY WHEEL
D605, L610
D604, L609
IC610 (2/2) DRUM MOTOR DRIVE
COM
VS
13.19
POSITION DET
STBY
1B SET
SWITCHING DEVICE
15.17
M901 DRUM MOTOR
U
V
W
IC611
UN 13.5V
UN 9V REG
IC609 CAPSTAN MOTOR DRIVE
VM
CAP FWD
120° LOGIC
BRAKE
U+
U-
V+
V-
W+
W-
CAP ERROR
M902 CAPSTAN MOTOR
H
CN606
FE ON
RP PB MODE
RF SWP
ME/MP
PB RF
REC RF
VIDEO (2)
SP/LP DET
Q602 (2/2)
RF SWR
CLOG DET
SW5V
Q614
SW
IC603
ATF, SP/LP DET.
GCA
RF DETECT
CR PULSE DETECT
PB SP/LP DETECT
CLOG DETECT
PRE AMP
BALANCED MODULATOR
16KHz BPF
46KHz BPF
FH DET
BUFFER
CK IN
CLOCK OUT
ATF ERR
REF PILOT
Q603
SW 5V
REC Y
REC C
REC AFM
Y/C/ATF/AFM MIX
Q139, 141-145
REC ATF
VIDEO BLOCK
(See Page 5-22)
09

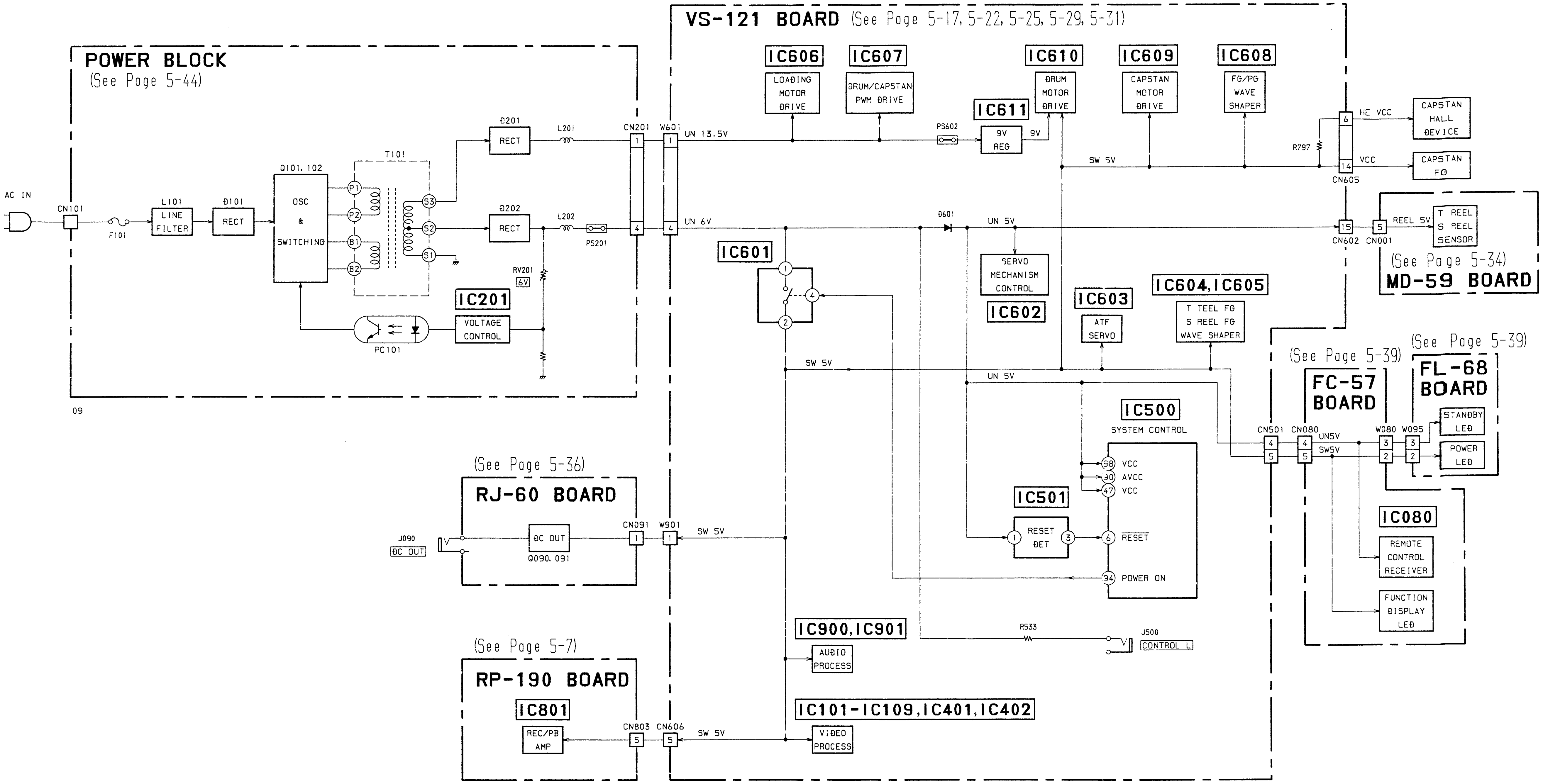
4-5. SYSTEM CONTROL BLOCK DIAGRAM


FL-68 BOARD
(See Page 5-39)
UN 5V
Q095
SW 5V
D096
D067
D095
S095
POWER
W095
STANDBY
POWER
FC-57 BOARD
(See Page 5-39)
W080
CN080
S083
S081
S087
PLAY
STOP
EJECT
S086
S084
REC
FF
S080
S085
S082
F-REW
PAUSE
REW
SW 5V
C-IN
REC
REW
PLAY
Hi8
FF
PAUSE
D080
D081
D083
D084
D087
D086
D085
D082
Q080
LED DRIVE
Q082
LED DRIVE
Q083
LED DRIVE
Q081
LED DRIVE
REMOTE COMANDER RECEIVER
IC080
VS-121 BOARD (SYSTEM CONTROL)
(See Page 5-29)
CN501
IC500
MODE CONTROL
RESET
IC501
RESET DET
D601
UN 5V
UN 5.9V
AD0
AD1
AD2
C-IN LED
REC LED
REW LED
PB LED
Hi8 LED
FF LED
PAUSE LED
SIRCS IN
RF SW POSI 1
RF SW POSI 2
UN SW 5V
RV500
RF SW POSITION 1
RV501
RF SW POSITION 2
INT VD
COSMO RESET
COSMO CS
TT SCK
TT SO
TT SI
COSMO SCK
COSMO SI
COSMO SO
POWER ON
POWER CONT
X0
X1
X500
10MHz
J500
CONTROL L
LANC VDD
UN5.9V
Q500
LANC JACK
LANC INTERFACE
LANC IN
LANC OUT
IC500 ④ REC/PB 5.2Vp-p(10MHz)
SERVO BLOCK
(See Page 5-25)
IC602
SERVO/SYSTEM CONTROL
INT VD
COSMO RESET
COSMO CS
SCK
SI BUS
SO BUS
SW 5V
UN 5.9V
IC601
09

4-6. AUDIO BLOCK DIAGRAM

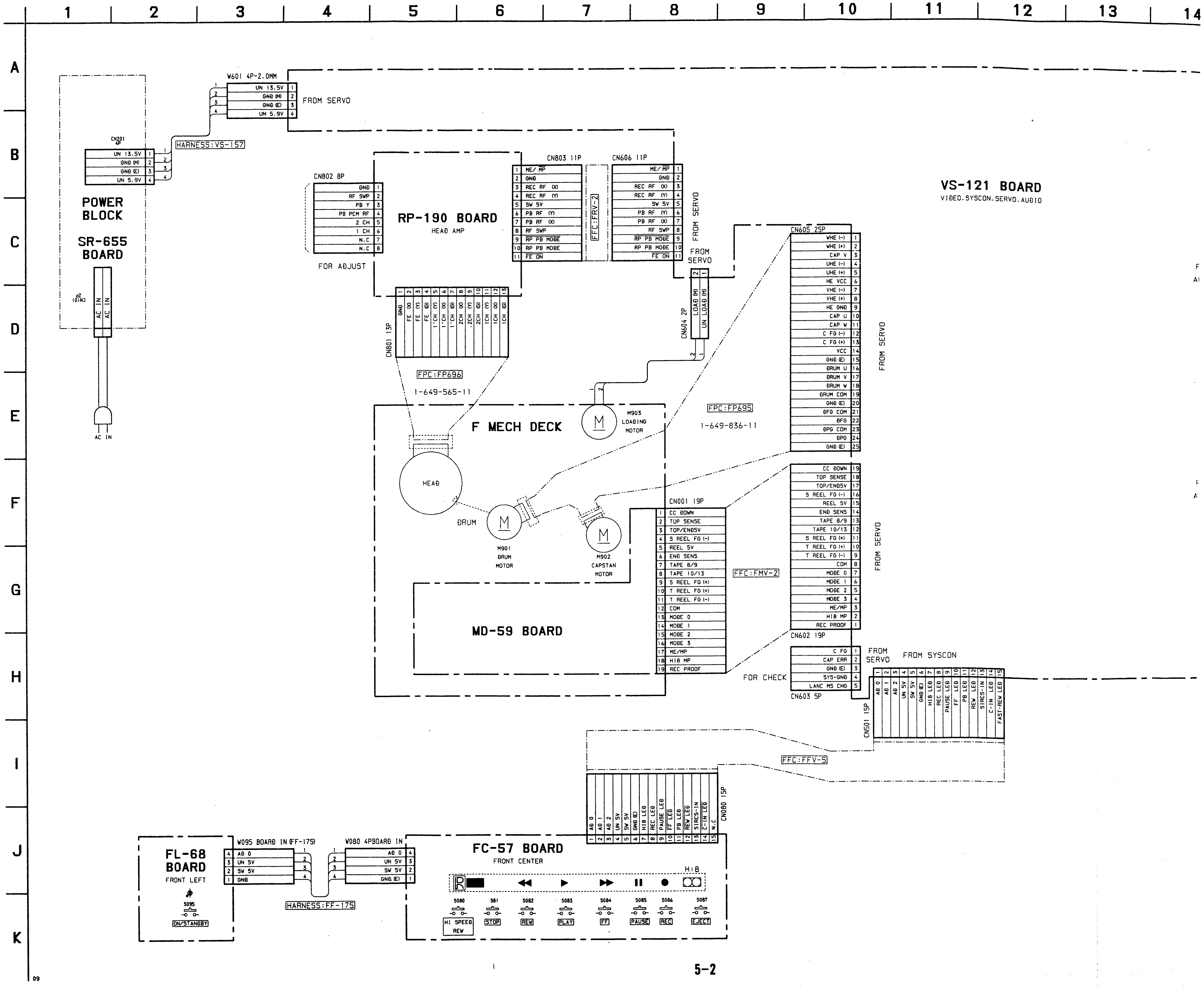

(See Page 5-36)
RJ-60 BOARD
LINE OUT2
J090
CN091
W901
(See Page 5-41)
RJ-62 BOARD
CNJ100
CN100
CN900
AUDIO LINE IN
AUDIO LINE OUT2
L
R
LINE IN L
LINE IN R
LINE OUT L
LINE OUT R
VS-121 BOARD (AUDIO)
(See Page 5-31)
5V
Q902
AFM MODE
AUDIO PB
SP/LP
AFM OUTSEL
Q901
SP/LP SWITCH
IC901
AFM STEREO PROCESS
REC/PB
LINE IN3 L
LINE IN3 R
ATT
AGC
MATRIX
Q903, Q906, Q907
MUTE SW
OUTPUT SEL.
RF AUDIO
AUDIO MUTE
Q900
MUTE
RV901
DEV 1.5MHz
NR
1.5MHz MODEM
1.7MHz MODEM
ST/MONO
AFM MODE DET
Q908
REC AFM
IC900
AFM PLL
1.5M PLL
1.7M PLL
FL901
1.5M BPF
1.7M BPF
FL900
Q905
Q904
PB RF
REC Y
REC C
REC ATF
Q143
Q142, 139
FSC (VIDEO)
FSC (Q107)
(See Page 5-22)
VIDEO BLOCK
CN606
REC RF
VIDEO (2) (RP-190)
SERVO
(IC602 (83)) AFM MODE
(IC602 (84)) AUDIO PB
(IC602 (8)) SP/LP
(IC602 (82)) AFM OUTSEL
(IC602 (72)) AUDIO MUTE
(IC602 (51)) AFM MODE DET
(IC602 (99)) RF SWP
09

4-7. POWER BLOCK DIAGRAM

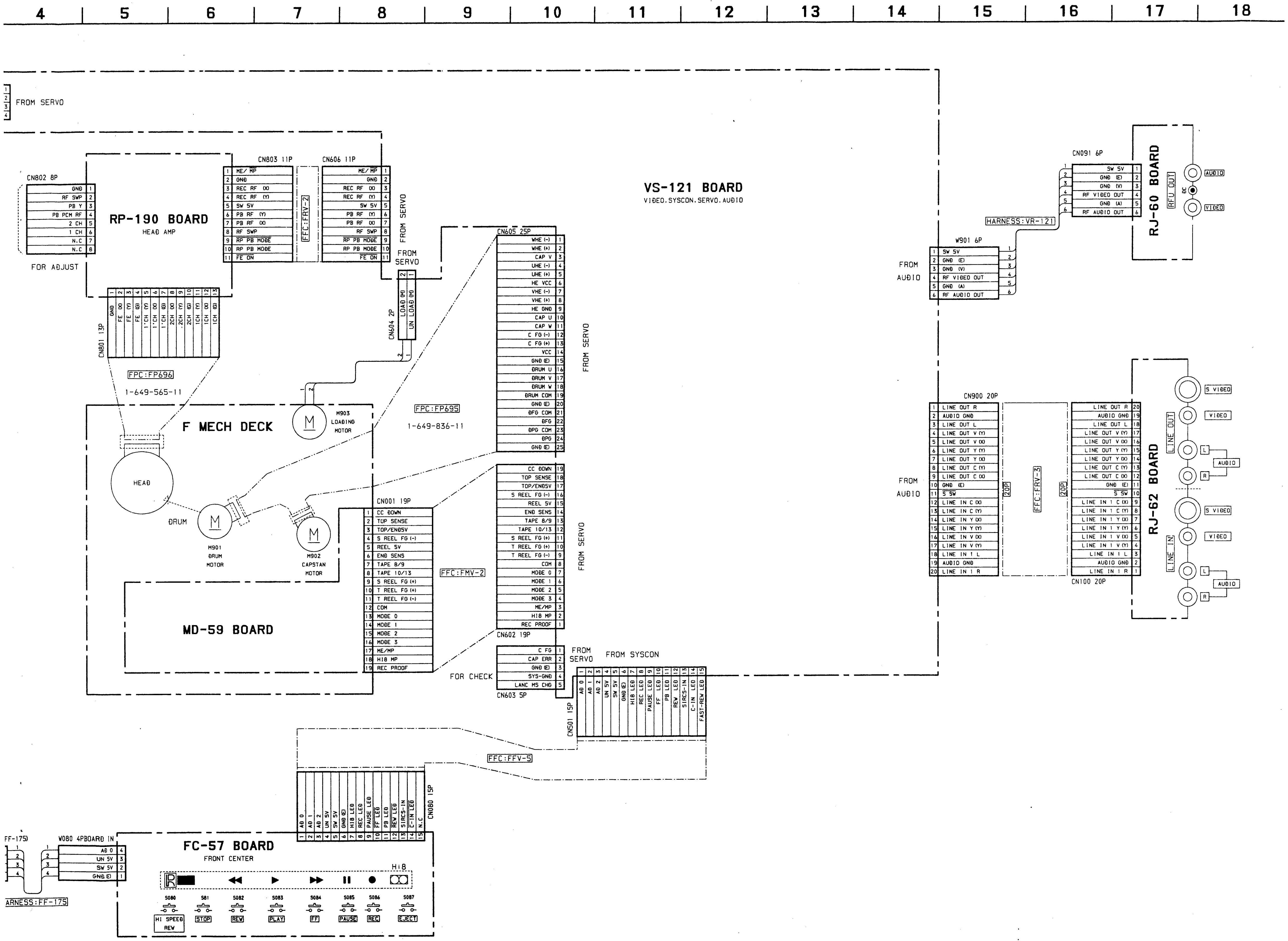

POWER BLOCK
(See Page 5-44)
AC IN
CN101
F101
L101
LINE FILTER
D101
RECT
Q101, 102
OSC & SWITCHING
T101
P1
P2
B1
B2
S3
S2
S1
D201
RECT
D202
RECT
L201
L202
PS201
RV201
6V
IC201
VOLTAGE CONTROL
PC101
CN201
09
VS-121 BOARD (See Page 5-17, 5-22, 5-25, 5-29, 5-31)
W601
UN 13.5V
UN 6V
IC606
LOADING MOTOR DRIVE
IC607
DRUM/CAPSTAN PWM DRIVE
PS602
IC611
9V REG
9V
IC610
DRUM MOTOR DRIVE
IC609
CAPSTAN MOTOR DRIVE
IC608
FG/PG WAVE SHAPER
SW 5V
R797
HE VCC
VCC
CN605
CAPSTAN HALL DEVICE
CAPSTAN FG
D601
UN 5V
SERVO MECHANISM CONTROL
IC602
IC601
IC603
ATF SERVO
IC604, IC605
T TEEL FG
S REEL FG
WAVE SHAPER
CN602
CN001
REEL 5V
T REEL
S REEL
SENSOR
(See Page 5-34)
MD-59 BOARD
(See Page 5-39)
FC-57 BOARD
(See Page 5-39)
FL-68 BOARD
CN501
CN080
UN5V
SW5V
W080
W095
STANDBY LED
POWER LED
IC080
REMOTE CONTROL RECEIVER
FUNCTION DISPLAY LED
IC500
SYSTEM CONTROL
VCC
AVCC
VCC
IC501
RESET DET
RESET
POWER ON
R533
J500
CONTROL L
(See Page 5-36)
RJ-60 BOARD
J090
DC OUT
DC OUT
Q090, 091
CN091
W901
SW 5V
IC900, IC901
AUDIO PROCESS
(See Page 5-7)
RP-190 BOARD
IC801
REC/PB AMP
CN803
CN606
SW 5V
IC101-IC109, IC401, IC402
VIDEO PROCESS

SECTION 5
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

5-1. FRAME SCHEMATIC DIAGRAM



POWER BLOCK
SR-655 BOARD
CN201 4P
UN 13.5V
GND (M)
GND (E)
UN 5.9V
AC IN
HARNESS:VS-157
W601 4P-2.0MM
FROM SERVO
RP-190 BOARD
HEAD AMP
CN802 8P
FOR ADJUST
CN803 11P
CN606 11P
FFC:FRV-2
CN801 13P
FPC:FP696
1-649-565-11
CN604 2P
LOAD (M)
UN LOAD (M)
FROM SERVO
F MECH DECK
HEAD
DRUM
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
M903 LOADING MOTOR
FPC:FP695
1-649-836-11
MD-59 BOARD
CN001 19P
FFC:FMV-2
VS-121 BOARD
VIDEO.SYSCON.SERVO.AUDIO
CN605 25P
CN602 19P
CN603 5P
FOR CHECK
FROM SYSCON
CN501 15P
FFC:FFV-5
CN080 15P
FL-68 BOARD
FRONT LEFT
S095
ON/STANDBY
W095 BOARD IN (FF-175)
W080 4PBOARD IN
HARNESS:FF-175
FC-57 BOARD
FRONT CENTER
HI8
S080
S81
S082
S083
S084
S085
S086
S087
HI SPEED REW
STOP
REW
PLAY
FF
PAUSE
REC
EJECT


4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
1
2
3
4
FROM SERVO
CN802 8P
GND 1
RF SWP 2
PB Y 3
PB PCM RF 4
2 CH 5
1 CH 6
N.C 7
N.C 8
FOR ADJUST
RP-190 BOARD
HEAD AMP
CN803 11P
1 ME/MP
2 GND
3 REC RF (X)
4 REC RF (Y)
5 SW 5V
6 PB RF (Y)
7 PB RF (X)
8 RF SWP
9 RP PB MODE
10 RP PB MODE
11 FE ON
FFC:FRV-2
CN606 11P
ME/MP 1
GND 2
REC RF (X) 3
REC RF (Y) 4
SW 5V 5
PB RF (Y) 6
PB RF (X) 7
RF SWP 8
RP PB MODE 9
RP PB MODE 10
FE ON 11
FROM SERVO
FROM SERVO
CN604 2P
1 UN LOAD (M)
2 LOAD (M)
CN801 13P
1 GND
2 FE (X)
3 FE (Y)
4 FE (G)
5 1'CH (Y)
6 1'CH (X)
7 1'CH (G)
8 2CH (X)
9 .2CH (Y)
10 2CH (G)
11 1CH (Y)
12 1CH (X)
13 1CH (G)
FPC:FP696
1-649-565-11
F MECH DECK
M
M903
LOADING
MOTOR
HEAD
DRUM
M
M901
DRUM
MOTOR
M
M902
CAPSTAN
MOTOR
MD-59 BOARD
FPC:FP695
1-649-836-11
VS-121 BOARD
VIDEO.SYSCON.SERVO.AUDIO
CN605 25P
WHE (-) 1
WHE (+) 2
CAP V 3
UHE (-) 4
UHE (+) 5
HE VCC 6
VHE (-) 7
VHE (+) 8
HE GND 9
CAP U 10
CAP W 11
C FG (-) 12
C FG (+) 13
VCC 14
GND (E) 15
DRUM U 16
DRUM V 17
DRUM W 18
DRUM COM 19
GND (E) 20
DFG COM 21
DFG 22
DPG COM 23
DPG 24
GND (E) 25
FROM SERVO
CN001 19P
1 CC DOWN
2 TOP SENSE
3 TOP/END5V
4 S REEL FG (-)
5 REEL 5V
6 END SENS
7 TAPE 8/9
8 TAPE 10/13
9 S REEL FG (+)
10 T REEL FG (+)
11 T REEL FG (-)
12 COM
13 MODE 0
14 MODE 1
15 MODE 2
16 MODE 3
17 ME/MP
18 HI8 MP
19 REC PROOF
FFC:FMV-2
CC DOWN 19
TOP SENSE 18
TOP/END5V 17
S REEL FG (-) 16
REEL 5V 15
END SENS 14
TAPE 8/9 13
TAPE 10/13 12
S REEL FG (+) 11
T REEL FG (+) 10
T REEL FG (-) 9
COM 8
MODE 0 7
MODE 1 6
MODE 2 5
MODE 3 4
ME/MP 3
HI8 MP 2
REC PROOF 1
CN602 19P
FROM SERVO
C FG 1
CAP ERR 2
GND (E) 3
SYS-GND 4
LANC MS CHG 5
CN603 5P
FOR CHECK
FROM SERVO
FROM SYSCON
CN501 15P
1 AD 0
2 AD 1
3 AD 2
4 UN 5V
5 SW 5V
6 GND (E)
7 HI8 LED
8 REC LED
9 PAUSE LED
10 FF LED
11 PB LED
12 REW LED
13 SIRCS-IN
14 C-IN LED
15 FAST-REW LED
FFC:FFV-5
CN080 15P
1 AD 0
2 AD 1
3 AD 2
4 UN 5V
5 SW 5V
6 GND (E)
7 HI8 LED
8 REC LED
9 PAUSE LED
10 FF LED
11 PB LED
12 REW LED
13 SIRCS-IN
14 C-IN LED
15 N.C
FF-175)
1
2
3
4
W080 4PBOARD IN
AD 0 4
UN 5V 3
SW 5V 2
GND (E) 1
ARNESS:FF-175
FC-57 BOARD
FRONT CENTER
Hi8
S080
S81
S082
S083
S084
S085
S086
S087
HI SPEED REW
STOP
REW
PLAY
FF
PAUSE
REC
EJECT
FROM AUDIO
W901 6P
1 SW 5V
2 GND (E)
3 GND (V)
4 RF VIDEO OUT
5 GND (A)
6 RF AUDIO OUT
HARNESS:VR-121
CN091 6P
SW 5V 1
GND (E) 2
GND (V) 3
RF VIDEO OUT 4
GND (A) 5
RF AUDIO OUT 6
RJ-60 BOARD
RFU OUT
AUDIO
DC
VIDEO
FROM AUDIO
CN900 20P
1 LINE OUT R
2 AUDIO GND
3 LINE OUT L
4 LINE OUT V (Y)
5 LINE OUT V (X)
6 LINE OUT Y (Y)
7 LINE OUT Y (X)
8 LINE OUT C (Y)
9 LINE OUT C (X)
10 GND (E)
11 S SW
12 LINE IN C (X)
13 LINE IN C (Y)
14 LINE IN Y (X)
15 LINE IN Y (Y)
16 LINE IN V (X)
17 LINE IN V (Y)
18 LINE IN 1 L
19 AUDIO GND
20 LINE IN 1 R
20P
FFC:FRV-3
20P
LINE OUT R 20
AUDIO GND 19
LINE OUT L 18
LINE OUT V (Y) 17
LINE OUT V (X) 16
LINE OUT Y (Y) 15
LINE OUT Y (X) 14
LINE OUT C (Y) 13
LINE OUT C (X) 12
GND (E) 11
S SW 10
LINE IN 1 C (X) 9
LINE IN 1 C (Y) 8
LINE IN 1 Y (X) 7
LINE IN 1 Y (Y) 6
LINE IN 1 V (X) 5
LINE IN 1 V (Y) 4
LINE IN 1 L 3
AUDIO GND 2
LINE IN 1 R 1
CN100 20P
RJ-62 BOARD
LINE OUT
S VIDEO
VIDEO
L
R
AUDIO
LINE IN
S VIDEO
VIDEO
L
R
AUDIO

FRAME

5-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- Through hole is omitted.
- ▨ : Pattern from the side which enables seeing.
  (The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.

* Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistor are in orms, 1/4 unless otherwise noted.
- Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair.*
- ━━ : B+ Line.*
- ‒ ‒ ‒ : B– Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

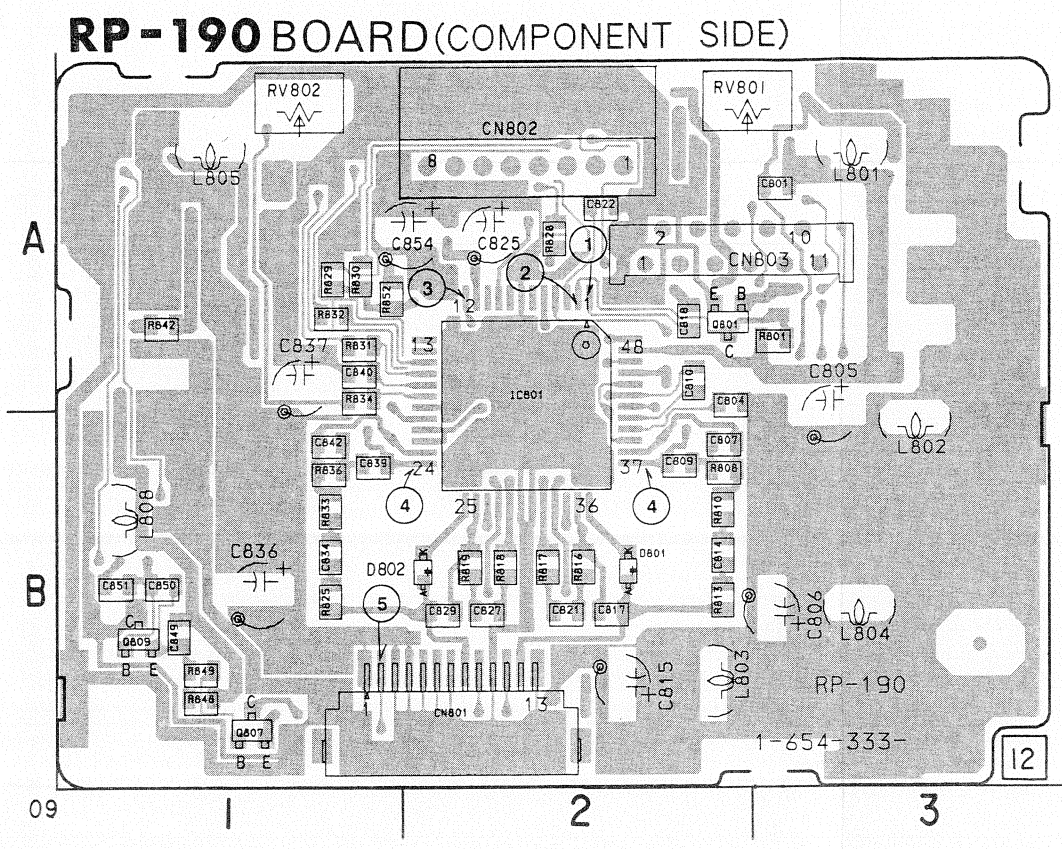
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

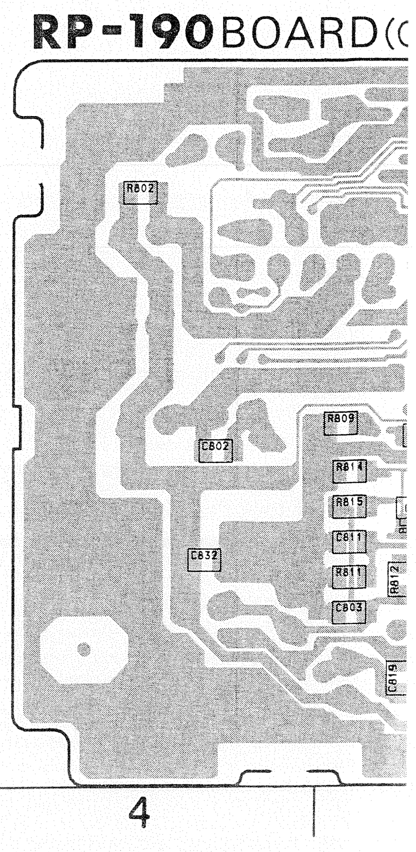
When indicating parts by refer- ence number, please include the board name.

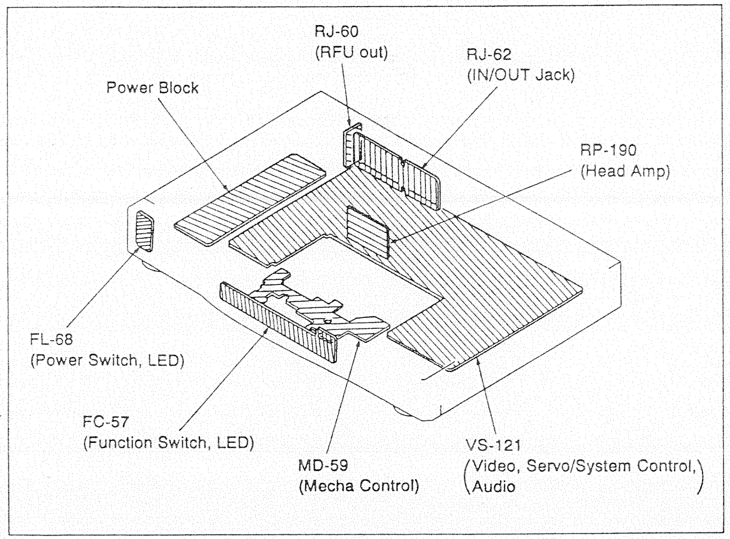
*: indicated by the color red.

RP-190 (HEAD AMP) PRINTED WIRING BOARD

— Ref. No. RP-190 BOARD: 1000 series —


RP-190 BOARD(COMPONENT SIDE)
RV802
CN802
RV801
L805
8
1
L801
C801
C822
R828
C854
C825
1
2
3
2
10
CN803
11
12
R829
R830
R852
R832
E
B
Q801
C
R801
C818
R842
C837
R831
13
48
C840
IC801
R834
C810
C804
C805
C842
R836
C839
24
37
C809
R808
C807
L802
4
25
36
4
R833
R810
L808
C836
D802
D801
R834
R819
R818
R817
R816
R814
C851
C850
R825
5
C829
C827
C821
C817
R813
C806
L804
Q609
R649
C815
L803
RP-190
R849
B
E
C
R848
CN801
13
Q807
1-654-333-
12
B
E
A
B
09
1
2
3

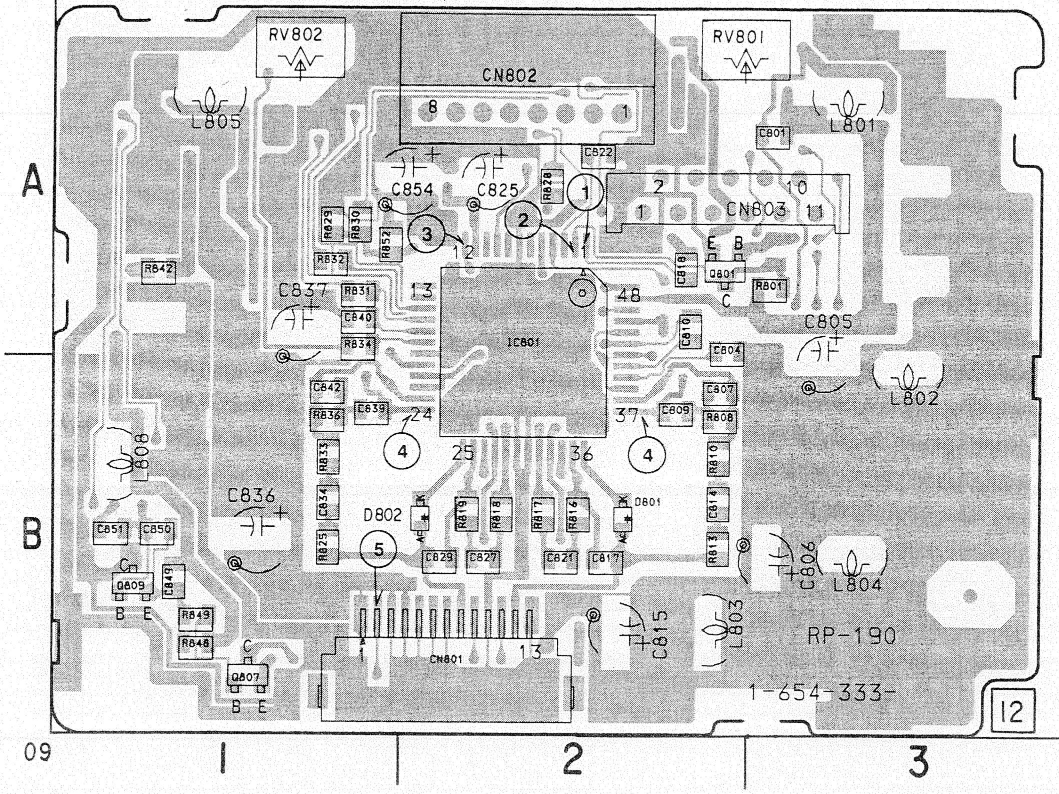

RP-190BOARD(C
R802
R809
C802
R814
R815
C832
C811
R811
R812
C803
C819
4


RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

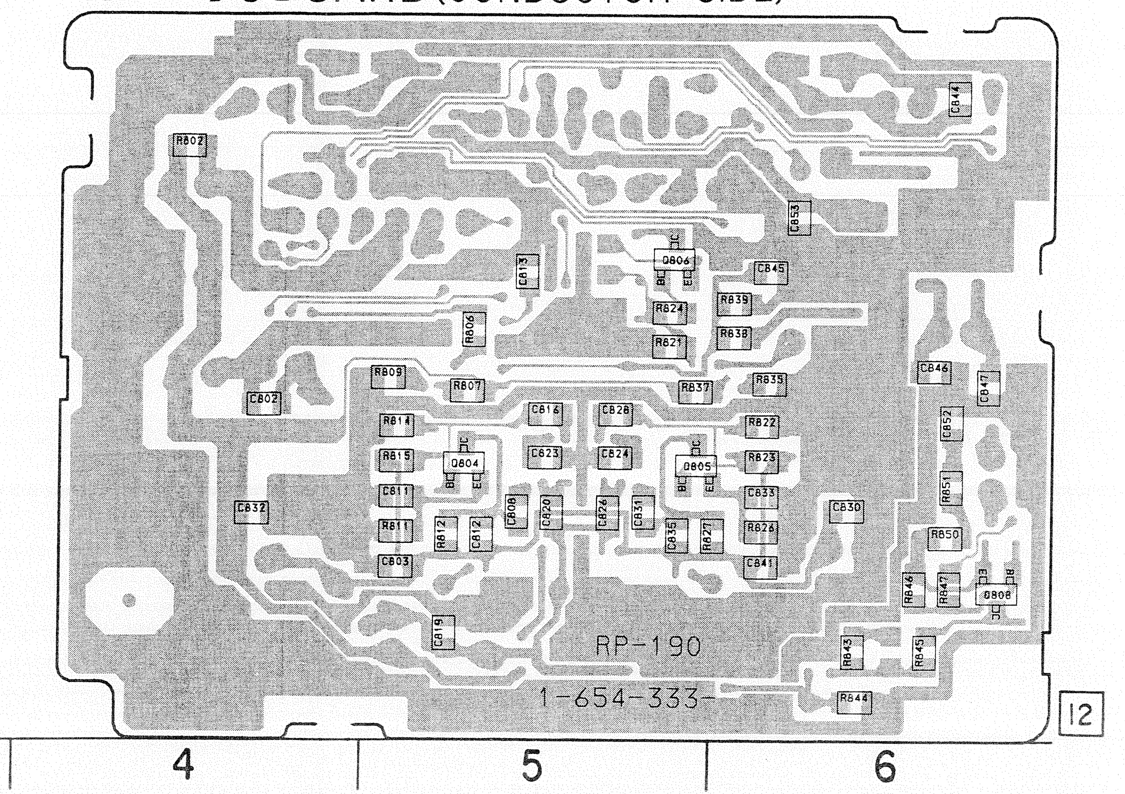
RP-190 (HEAD AMP) PRINTED WIRING BOARD

— Ref. No. RP-190 BOARD: 1000 series —

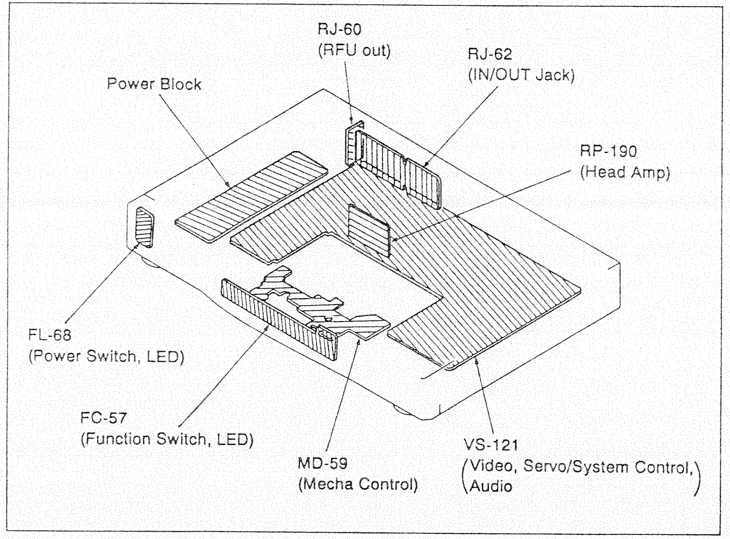
RP-190 BOARD (COMPONENT SIDE)


RV802
RV801
CN802
8
1
L805
L801
C801
C822
C854
C825
R828
CN803
2
10
1
11
R829
R830
R852
R832
3
12
2
1
R842
C837
R831
C840
R834
13
IC801
48
E
B
Q801
C
R801
C818
C810
C805
C804
L802
C842
R836
C839
24
37
C809
C807
R808
4
25
36
4
R833
R810
C836
C834
D802
D801
R819
R818
R817
R816
C814
C851
C850
R825
5
C829
C827
C821
C817
R813
C806
L804
Q809
C849
B
E
C815
L803
R849
R848
C
Q807
B
E
1
CN801
13
RP-190
1-654-333-
12
A
B
09
1
2
3

RP-190 BOARD (CONDUCTOR SIDE)

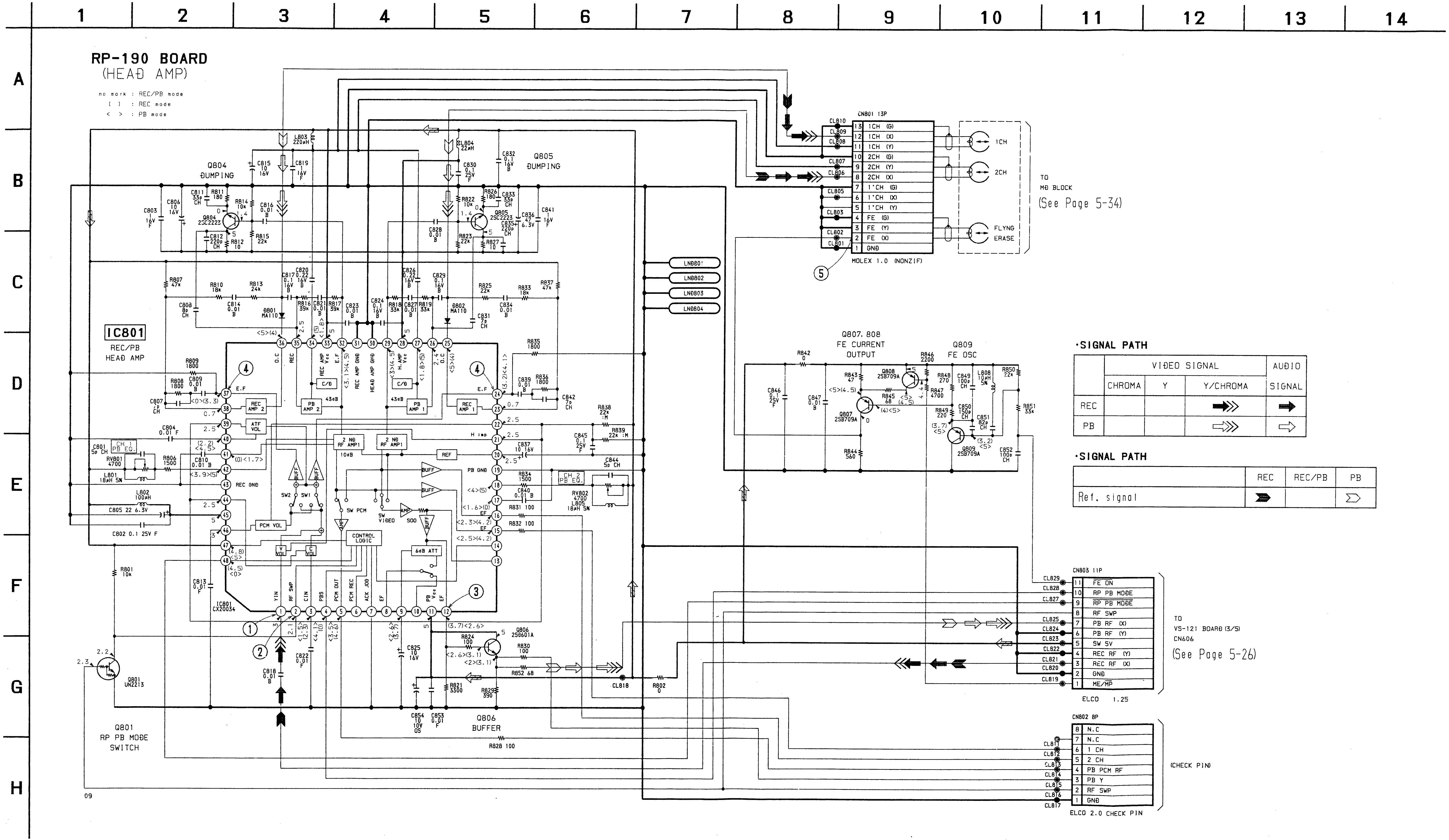

C844
R802
C853
C813
Q806
C845
R806
R824
R839
R821
R838
R809
R807
R837
R835
C846
C847
C802
C816
C828
R822
C852
R814
R815
Q804
C823
C824
Q805
R823
C811
R806
C820
C826
C831
C833
C830
C832
R811
R812
C812
C836
R827
R826
R851
R850
C803
C841
R846
R847
Q808
C819
RP-190
R843
R845
1-654-333-
R844
12
4
5
6

RP-190 BOARD	
CN801	B-2
CN802	A-2
CN803	A-3
D801	B-2
D802	B-1
IC801	A-2
Q801	A-2
Q804	B-5
Q805	B-5
Q806	A-5
Q807	B-1
Q808	B-6
Q809	B-1


RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

RP-190 (HEAD AMP) SCHEMATIC DIAGRAM

— Ref. No. RP-190 BOARD: 1000 series —

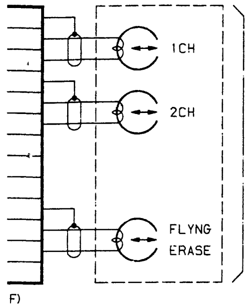

1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
RP-190 BOARD
(HEAD AMP)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
IC801
REC/PB
HEAD AMP
IC801
CX20034
Q804
DUMPING
Q804
2SC2223
Q805
DUMPING
Q805
2SC2223
Q801
UN2213
Q801
RP PB MODE
SWITCH
Q806
2SB601A
Q806
BUFFER
Q807, 808
FE CURRENT
OUTPUT
Q809
FE OSC
Q807
2SB709A
Q808
2SB709A
Q809
2SB709A
REC AMP 2
PB AMP 2
REC AMP 1
PB AMP 1
ATF VOL
2 NO RF AMP1
2 NO RF AMP1
REF
BUFF
PCM VOL
CONTROL LOGIC
V VOL
C VOL
6dB ATT
SW PCM
SW VIDEO
SOO
CH 1 PB EQ.
CH 2 PB EQ.
RV801 4700
RV802 4700
L801 18μH 5N
L802 100μH
L803 220μH
L804 22μH
L805 18μH 5N
L808 10μH 5N
LND801
LND802
LND803
LND804
CN801 13P
CL810
CL809
CL808
CL807
CL806
CL805
CL803
CL802
CL801
13 1CH (G)
12 1CH (X)
11 1CH (Y)
10 2CH (G)
9 2CH (Y)
8 2CH (X)
7 1'CH (G)
6 1'CH (X)
5 1'CH (Y)
4 FE (G)
3 FE (Y)
2 FE (X)
1 GND
MOLEX 1.0 (NONZIF)
1CH
2CH
FLYNG
ERASE
TO
MD BLOCK
(See Page 5-34)
CN803 11P
CL829
CL828
CL827
CL825
CL824
CL823
CL822
CL821
CL820
CL819
CL818
11 FE ON
10 RP PB MODE
9 RP PB MODE
8 RF SWP
7 PB RF (X)
6 PB RF (Y)
5 SW 5V
4 REC RF (Y)
3 REC RF (X)
2 GND
1 ME/MP
ELCO 1.25
TO
VS-121 BOARD (3/5)
CN606
(See Page 5-26)
CN802 8P
CL811
CL812
CL813
CL814
CL815
CL816
CL817
8 N.C
7 N.C
6 1 CH
5 2 CH
4 PB PCM RF
3 PB Y
2 RF SWP
1 GND
ELCO 2.0 CHECK PIN
(CHECK PIN)
YIN
RF SWP
CIN
PBS
PCM OUT
PCM REC
ACK J00
EF
PB Vcc
EF
D.C
REC
REC AMP Vcc
E.F
REC AMP GND
HEAD AMP GND
H.AMP Vcc
PB GND
REC GND
H imp
①
②
③
④
⑤
09

·SIGNAL PATH

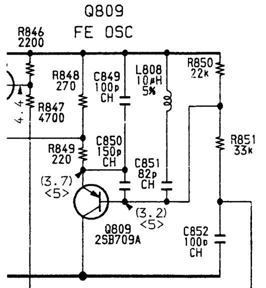
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡》	➡
PB			⇨》	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➤		▷


1CH
2CH
FLYNG
ERASE
F)

TO
MD BLOCK
(See Page 5-34)

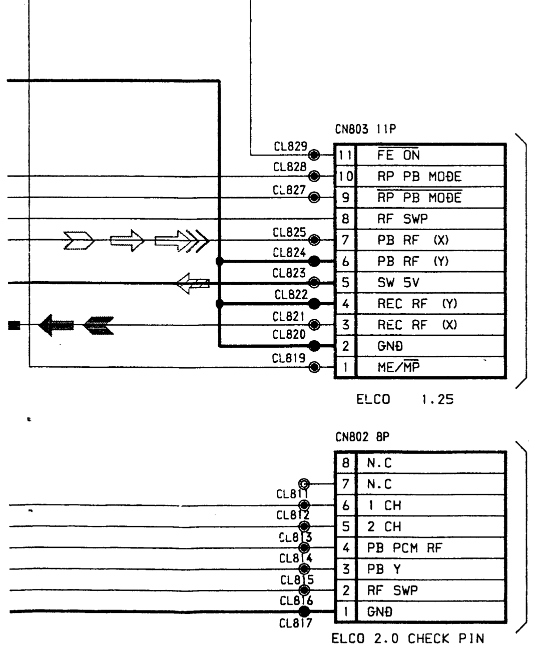

Q809
FE OSC
R846
2200
R847
4700
4.4
R848
270
C849
100p
CH
L808
10μH
5%
R850
22k
R849
220
C850
150p
CH
C851
82p
CH
R851
33k
(3.7)
<5>
(3.2)
<5>
Q809
2SB709A
C852
100p
CH

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC			➡»	➡
PB			⇨»	⇨

·SIGNAL PATH

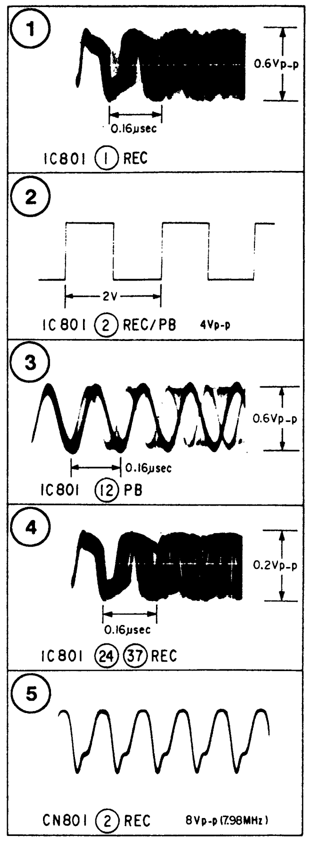
	REC	REC/PB	PB
Ref. signal	➤		▷


CN803 11P
CL829
CL828
CL827
CL825
CL824
CL823
CL822
CL821
CL820
CL819
11 FE ON
10 RP PB MODE
9 RP PB MODE
8 RF SWP
7 PB RF (X)
6 PB RF (Y)
5 SW 5V
4 REC RF (Y)
3 REC RF (X)
2 GND
1 ME/MP
ELCO 1.25
CN802 8P
CL811
CL812
CL813
CL814
CL815
CL816
CL817
8 N.C
7 N.C
6 1 CH
5 2 CH
4 PB PCM RF
3 PB Y
2 RF SWP
1 GND
ELCO 2.0 CHECK PIN

TO
VS-121 BOARD (3/5)
CN606
(See Page 5-26)

(CHECK PIN)

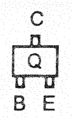
RP-190 BOARD



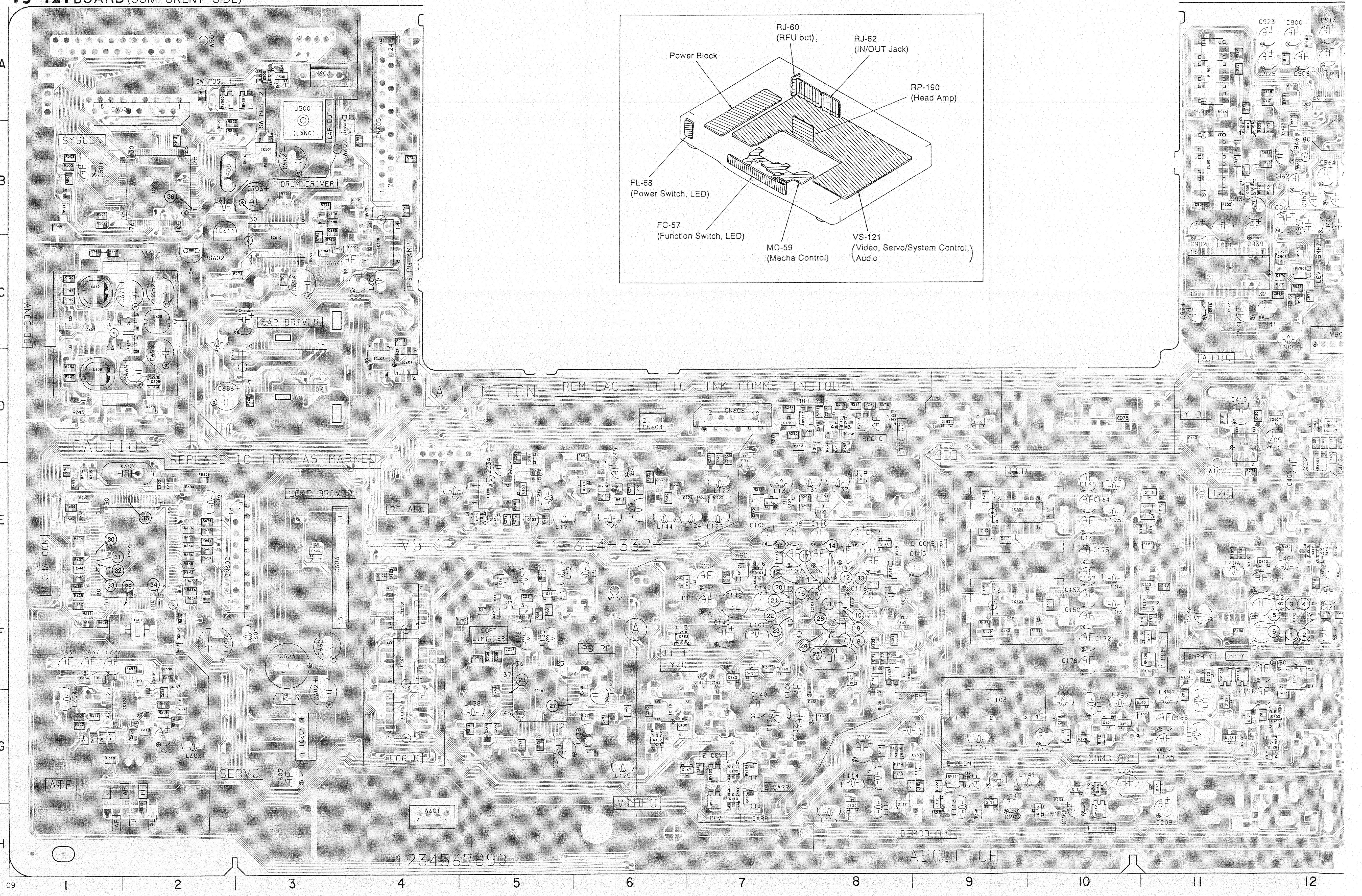
VS-121 (VIDEO, SERVO/SYSTEM CONTROL, AUDIO) PRINTED WIRING BOARD

— Ref. No. VS-121 BOARD: 2000 series —

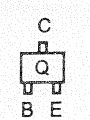
- Chip transistor

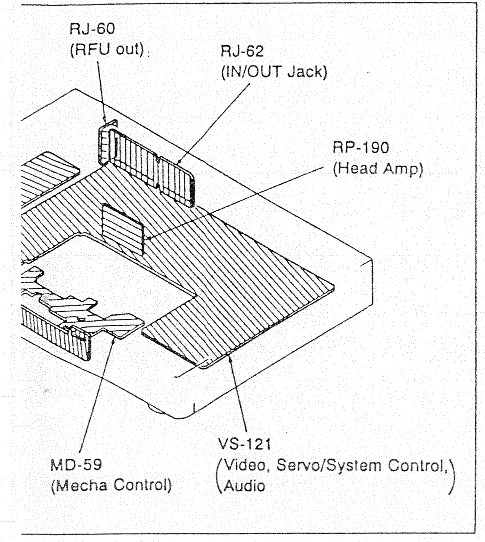


VS-121 BOARD (COMPONENT SIDE)

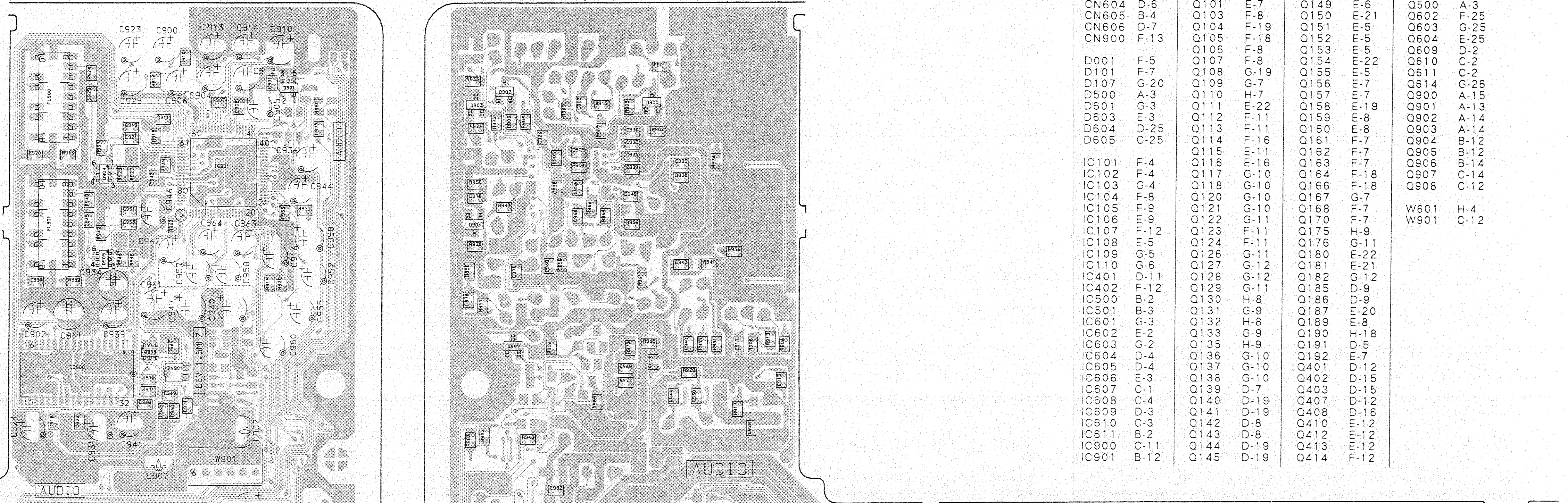

RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control,
Audio)
A
B
C
D
E
F
G
H
09
1
2
3
4
5
6
7
8
9
10
11
12
SYSCON
CN501
J500
(LANC)
SW POSI 1
SW POSI 2
CN603
CN605
CAP OUT Y
DRUM DRIVER
ICP N10
DD CONV
CAP DRIVER
FG PG AMP
CAUTION REPLACE IC LINK AS MARKED
ATTENTION REMPLACER LE IC LINK COMME INDIQUE
CN604
CN606
REC Y
REC C
REC RF
LOAD DRIVER
RF AGC
MECHA CON
VS-121 1-654-332
SOFT LIMITER
PB RF
LOGIC
SERVO
ATF
W601
VIDEO
ELLIC Y/C
AGC
E DEV
L DEV
E CARR
L CARR
C COMB G
C EMPH
DEMOD OUT
E DEEM
L DEEM
Y-COMB OUT
FL103
CCD
I/O
Y-DL
EMPH Y
PB Y
AUDIO
DEV 1.5MHZ
1234567890
ABCDEFGH

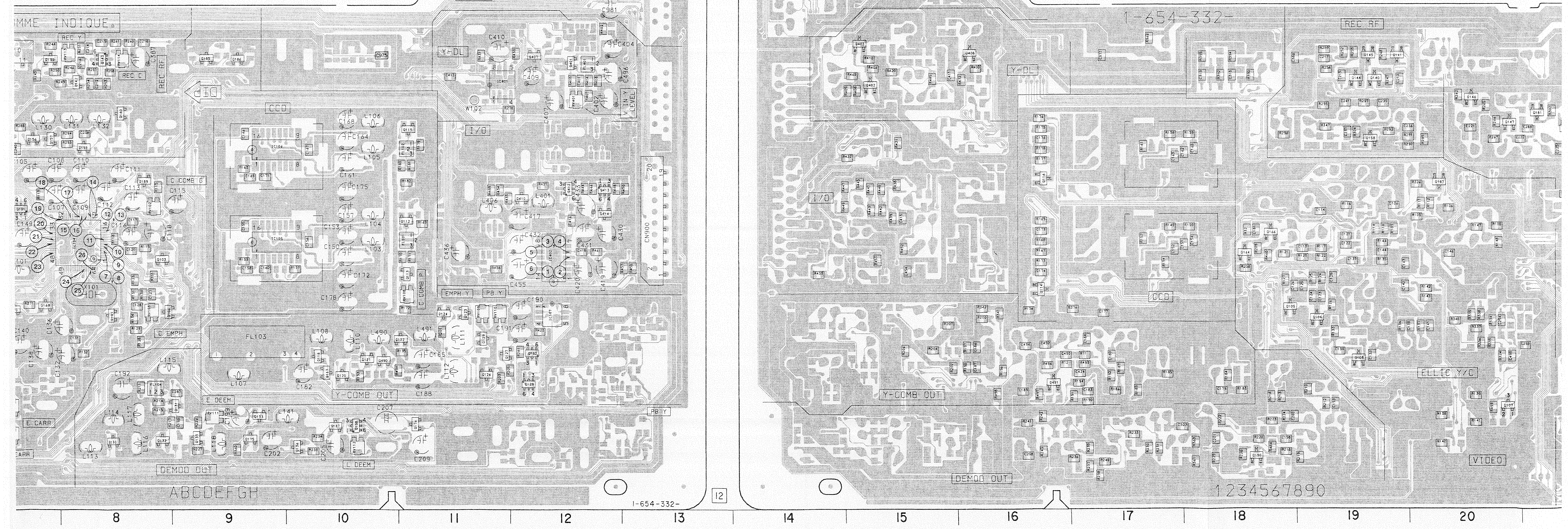
- Chip transistor




RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
RP-190
(Head Amp)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

VS-121 BOARD (CONDUCTOR SIDE)


AUDIO
AUDIO
W901
L900
1-654-332-


REC RF
Y-DL
I/O
CCD
C COMB P
EMPH Y
PB Y
Y-COMB OUT
DEMOD OUT
E DEEM
E CARR
C EMPH
ELLIC Y/C
VIDEO
CN900
FL103
ABCDEFGH
1-654-332-
12
1234567890
8
9
10
11
12
13
14
15
16
17
18
19
20

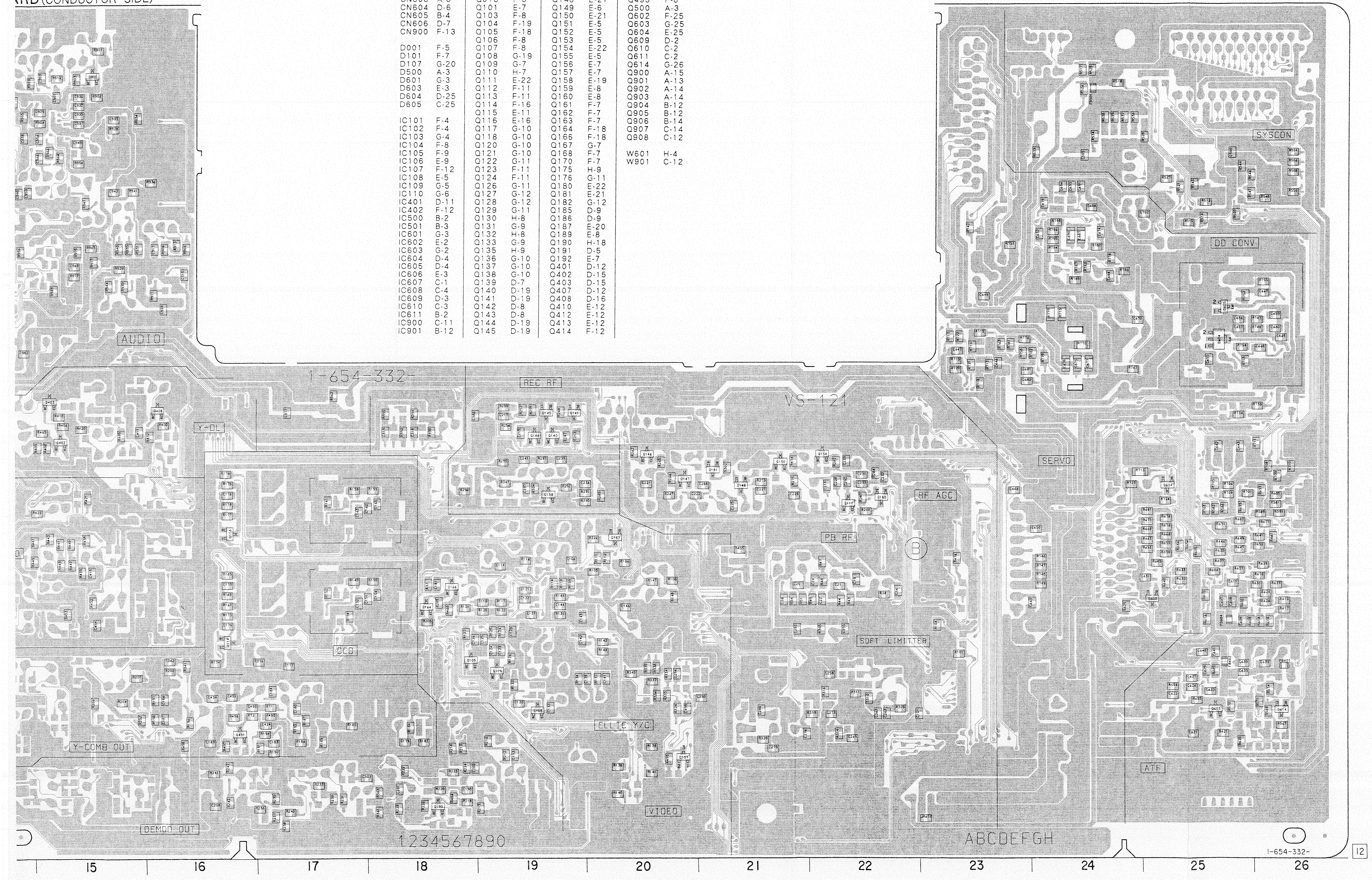
VS-121 BOARD

CN501	A-2	Q016	F-5	Q146	E-20	Q490	G-10
CN602	E-2	Q017	F-5	Q147	E-20	Q491	G-16
CN603	A-3	Q018	F-5	Q148	E-21	Q493	F-6
CN604	D-6	Q101	E-7	Q149	E-6	Q500	A-3
CN605	B-4	Q103	F-8	Q150	E-21	Q602	F-25
CN606	D-7	Q104	F-19	Q151	E-5	Q603	G-25
CN900	F-13	Q105	F-18	Q152	E-5	Q604	E-25
		Q106	F-8	Q153	E-5	Q609	D-2
D001	F-5	Q107	F-8	Q154	E-22	Q610	C-2
D101	F-7	Q108	G-19	Q155	E-5	Q611	C-2
D107	G-20	Q109	G-7	Q156	E-7	Q614	G-26
D500	A-3	Q110	H-7	Q157	E-7	Q900	A-15
D601	G-3	Q111	E-22	Q158	E-19	Q901	A-13
D603	E-3	Q112	F-11	Q159	E-8	Q902	A-14
D604	D-25	Q113	F-11	Q160	E-8	Q903	A-14
D605	C-25	Q114	F-16	Q161	F-7	Q904	B-12
		Q115	E-11	Q162	F-7	Q905	B-12
IC101	F-4	Q116	E-16	Q163	F-7	Q906	B-14
IC102	F-4	Q117	G-10	Q164	F-18	Q907	C-14
IC103	G-4	Q118	G-10	Q166	F-18	Q908	C-12
IC104	F-8	Q120	G-10	Q167	G-7		
IC105	F-9	Q121	G-10	Q168	F-7	W601	H-4
IC106	E-9	Q122	G-11	Q170	F-7	W901	C-12
IC107	F-12	Q123	F-11	Q175	H-9		
IC108	E-5	Q124	F-11	Q176	G-11		
IC109	G-5	Q126	G-11	Q180	E-22		
IC110	G-6	Q127	G-12	Q181	E-21		
IC401	D-11	Q128	G-12	Q182	G-12		
IC402	F-12	Q129	G-11	Q185	D-9		
IC500	B-2	Q130	H-8	Q186	D-9		
IC501	B-3	Q131	G-9	Q187	E-20		
IC601	G-3	Q132	H-8	Q189	E-8		
IC602	E-2	Q133	G-9	Q190	H-18		
IC603	G-2	Q135	H-9	Q191	D-5		
IC604	D-4	Q136	G-10	Q192	E-7		
IC605	D-4	Q137	G-10	Q401	D-12		
IC606	E-3	Q138	G-10	Q402	D-15		
IC607	C-1	Q139	D-7	Q403	D-15		
IC608	C-4	Q140	D-19	Q407	D-12		
IC609	D-3	Q141	D-19	Q408	D-16		
IC610	C-3	Q142	D-8	Q410	E-12		
IC611	B-2	Q143	D-8	Q412	E-12		
IC900	C-11	Q144	D-19	Q413	E-12		
IC901	B-12	Q145	D-19	Q414	F-12		

ARD (CONDUCTOR SIDE)

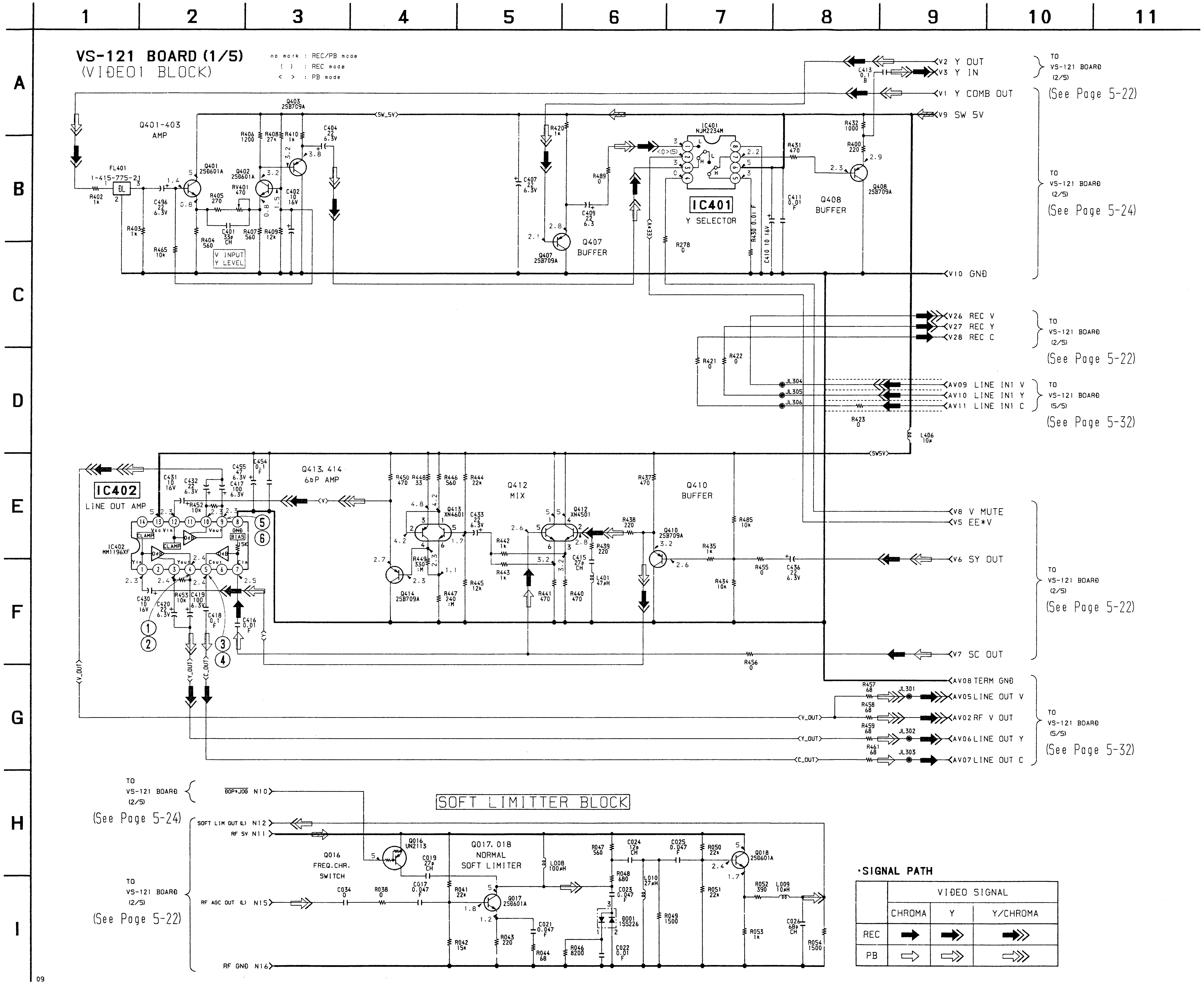
VS-121 BOARD

CN501	A-2	Q016	F-5	Q146	E-20	Q490	G-10
CN602	E-2	Q017	F-5	Q147	E-20	Q491	G-16
CN603	A-3	Q018	F-5	Q148	E-21	Q493	F-6
CN604	D-6	Q101	E-7	Q149	E-6	Q500	A-3
CN605	B-4	Q103	F-8	Q150	E-21	Q602	F-25
CN606	D-7	Q104	F-19	Q151	E-5	Q603	G-25
CN900	F-13	Q105	F-18	Q152	E-5	Q604	E-25
		Q106	F-8	Q153	E-5	Q609	D-2
D001	F-5	Q107	F-8	Q154	E-22	Q610	C-2
D101	F-7	Q108	G-19	Q155	E-5	Q611	C-2
D107	G-20	Q109	G-7	Q156	E-7	Q614	G-26
D500	A-3	Q110	H-7	Q157	E-7	Q900	A-15
D601	G-3	Q111	E-22	Q158	E-19	Q901	A-13
D603	E-3	Q112	F-11	Q159	E-8	Q902	A-14
D604	D-25	Q113	F-11	Q160	E-8	Q903	A-14
D605	C-25	Q114	F-16	Q161	F-7	Q904	B-12
		Q115	E-11	Q162	F-7	Q905	B-12
IC101	F-4	Q116	E-16	Q163	F-7	Q906	B-14
IC102	F-4	Q117	G-10	Q164	F-18	Q907	C-14
IC103	G-4	Q118	G-10	Q166	F-18	Q908	C-12
IC104	F-8	Q120	G-10	Q167	G-7		
IC105	F-9	Q121	G-10	Q168	F-7	W601	H-4
IC106	E-9	Q122	G-11	Q170	F-7	W901	C-12
IC107	F-12	Q123	F-11	Q175	H-9		
IC108	E-5	Q124	F-11	Q176	G-11		
IC109	G-5	Q126	G-11	Q180	E-22		
IC110	G-6	Q127	G-12	Q181	E-21		
IC401	D-11	Q128	G-12	Q182	G-12		
IC402	F-12	Q129	G-11	Q185	D-9		
IC500	B-2	Q130	H-8	Q186	D-9		
IC501	B-3	Q131	G-9	Q187	E-20		
IC601	G-3	Q132	H-8	Q189	E-8		
IC602	E-2	Q133	G-9	Q190	H-18		
IC603	G-2	Q135	H-9	Q191	D-5		
IC604	D-4	Q136	G-10	Q192	E-7		
IC605	D-4	Q137	G-10	Q401	D-12		
IC606	E-3	Q138	G-10	Q402	D-15		
IC607	C-1	Q139	D-7	Q403	D-15		
IC608	C-4	Q140	D-19	Q407	D-12		
IC609	D-3	Q141	D-19	Q408	D-16		
IC610	C-3	Q142	D-8	Q410	E-12		
IC611	B-2	Q143	D-8	Q412	E-12		
IC900	C-11	Q144	D-19	Q413	E-12		
IC901	B-12	Q145	D-19	Q414	F-12		


AUDIO
1-654-332-
REC RF
VS-121
Y-DL
SERVO
RF AGC
PB RF
B
CCD
SOFT LIMITTER
SYSCON
DD CONV
ELLIC Y/C
Y-COMB OUT
VIDEO
ATF
DEMOD OUT
1234567890
ABCDEFGH
1-654-332-
12
15
16
17
18
19
20
21
22
23
24
25
26

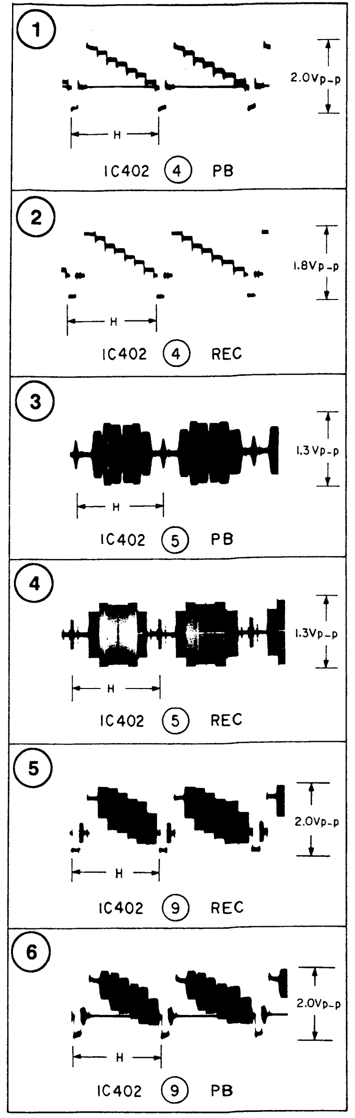
VS-121 (VIDEO (1)) SCHEMATIC DIAGRAM

— Ref. No. VS-121 BOARD: 2000 series —

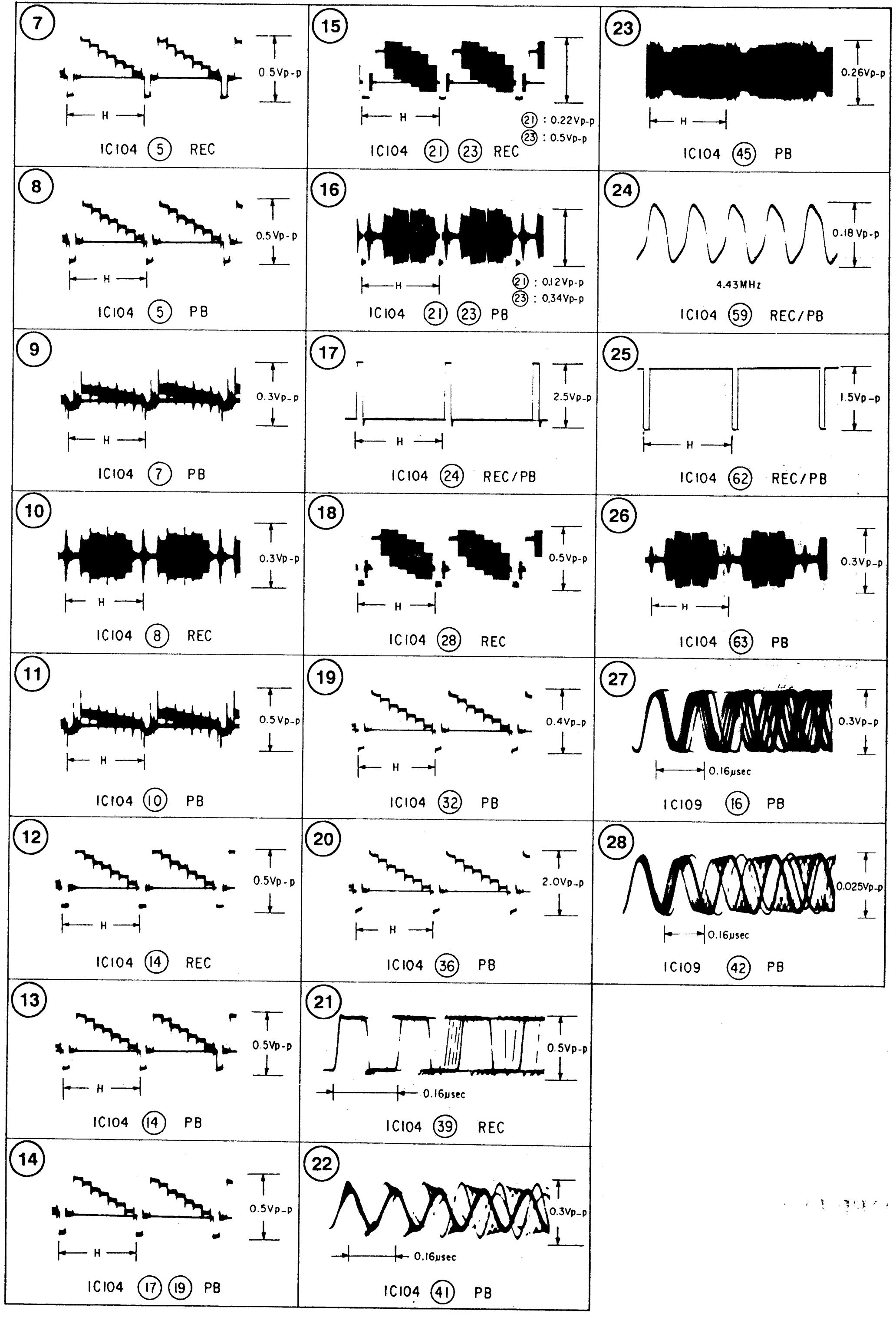

1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
VS-121 BOARD (1/5)
(VIDEO1 BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q401-403
AMP
FL401
1-415-775-21
DL
Q401
2SD601A
Q402
2SD601A
Q403
2SB709A
RV401
470
V INPUT
Y LEVEL
Q407
2SB709A
Q407
BUFFER
IC401
NJM2234M
IC401
Y SELECTOR
Q408
2SB709A
Q408
BUFFER
V2 Y OUT
V3 Y IN
V1 Y COMB OUT
V9 SW 5V
V10 GND
TO
VS-121 BOARD
(2/5)
(See Page 5-22)
(See Page 5-24)
V26 REC V
V27 REC Y
V28 REC C
JL304
JL305
JL306
AV09 LINE IN1 V
AV10 LINE IN1 Y
AV11 LINE IN1 C
(5/5)
(See Page 5-32)
L406
10μ
IC402
LINE OUT AMP
IC402
MM1196XF
CLAMP
BIAS
Q413, 414
6dB AMP
Q413
XN4601
Q414
2SB709A
Q412
MIX
Q412
XN4501
Q410
BUFFER
Q410
2SB709A
V8 V MUTE
V5 EE*V
V6 SY OUT
V7 SC OUT
AV08 TERM GND
AV05 LINE OUT V
AV02 RF V OUT
AV06 LINE OUT Y
AV07 LINE OUT C
JL301
JL302
JL303
V_OUT
Y_OUT
C_OUT
SOFT LIMITTER BLOCK
N10
SOFT LIM OUT (L) N12
RF 5V N11
RF AGC OUT (L) N15
RF GND N16
Q016
UN2113
Q016
FREQ.CHR.
SWITCH
Q017, 018
NORMAL
SOFT LIMITER
Q017
2SD601A
Q018
2SD601A
D001
1SS226
L008
100μH
L009
10μH
L010
27μH
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB	⇨	⇨	⇨

VS-121 BOARD (1/5)

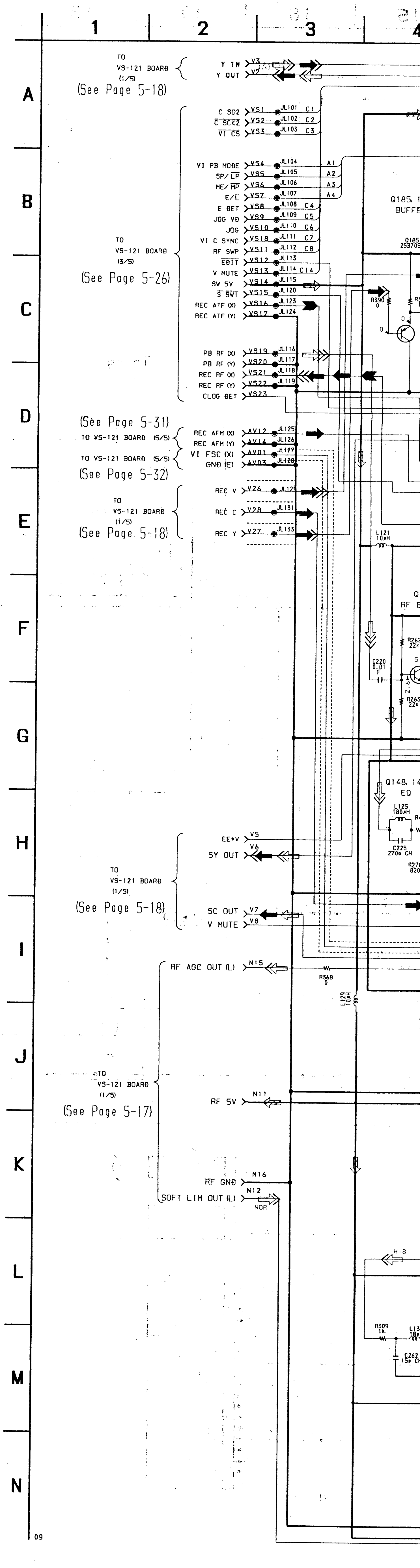


VS-121 BOARD (2/5)

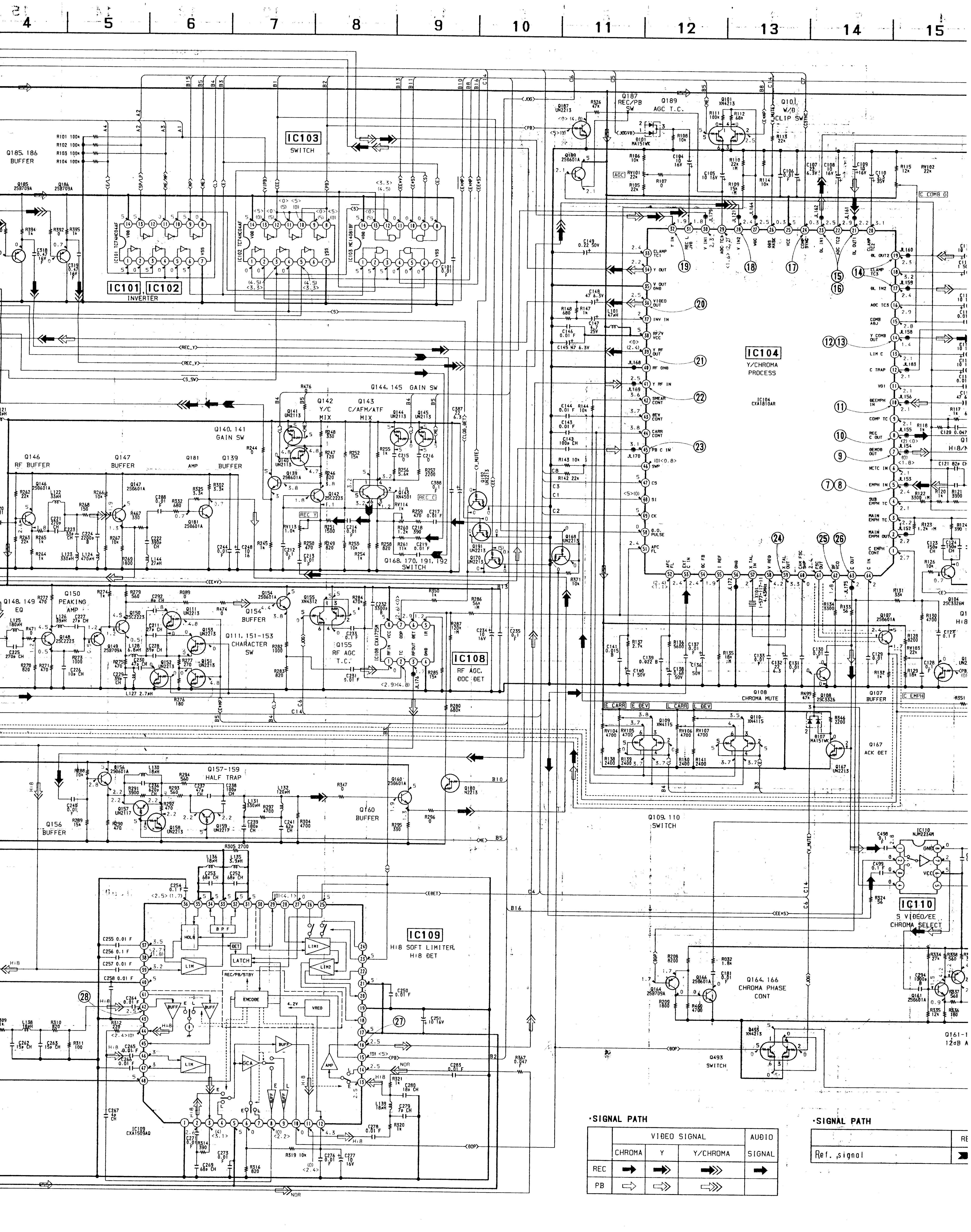


VS-121 (VIDEO (2)) SCHEMATIC DIAGRAM

— Ref. No. VS-121 BOARD: 2000 series —


1
2
3
4
A
B
C
D
E
F
G
H
I
J
K
L
M
N
TO VS-121 BOARD (1/5) (See Page 5-18)
Y IN V3
Y OUT V2
C SO2 VS1 JL101 C1
C SCK2 VS2 JL102 C2
VI CS VS3 JL103 C3
VI PB MODE VS4 JL104 A1
SP/LP VS5 JL105 A2
ME/MP VS6 JL106 A3
E/L VS7 JL107 A4
E DET VS8 JL108 C4
JOG VD VS9 JL109 C5
JOG VS10 JL110 C6
VI C SYNC VS18 JL111 C7
RF SWP VS11 JL112 C8
EDIT VS12 JL113
V MUTE VS13 JL114 C14
SW 5V VS14 JL115
S SW1 VS15 JL120
REC ATF (X) VS16 JL123
REC ATF (Y) VS17 JL124
PB RF (X) VS19 JL116
PB RF (Y) VS20 JL117
REC RF (X) VS21 JL118
REC RF (Y) VS22 JL119
CLOG DET VS23
TO VS-121 BOARD (3/5) (See Page 5-26)
(See Page 5-31) TO VS-121 BOARD (5/5)
REC AFM (X) AV12 JL125
REC AFM (Y) AV14 JL126
VI FSC (X) AV01 JL127
GND (E) AV03 JL128
TO VS-121 BOARD (5/5) (See Page 5-32)
REC V V26 JL129
REC C V28 JL131
REC Y V27 JL133
TO VS-121 BOARD (1/5) (See Page 5-18)
Q185, 1 BUFFE
Q185 2SB709
R390 0
L121 10μH
RF B
R262 22k
C220 0.01 F
2.6
R263 22k
Q148, 14 EQ
L125 180μH
C225 270p CH
R270 820
EE*V V5
SY OUT V6
SC OUT V7
V MUTE V8
TO VS-121 BOARD (1/5) (See Page 5-18)
RF AGC OUT (L) N15
R368 0
L129 10μH
TO VS-121 BOARD (1/5) (See Page 5-17)
RF 5V N11
RF GND N16
SOFT LIM OUT (L) N12 NOR
Hi8
R309 1k
C262 15p CH
09

• Refer to page 5-12 for Printed Wiring Board.


4
5
6
7
8
9
10
11
12
13
14
15
Q185, 186 BUFFER
IC101 IC102 INVERTER
IC103 SWITCH
Q187 REC/PB SW
Q189 AGC T.C.
Q101 W/D CLIP SW
IC104 Y/CHROMA PROCESS
CXA1810AR
Q146 RF BUFFER
Q147 BUFFER
Q181 AMP
Q139 BUFFER
Q140, 141 GAIN SW
Q142 Y/C MIX
Q143 C/AFM/ATF MIX
Q144, 145 GAIN SW
Q168, 170, 191, 192 SWITCH
Q148, 149 EQ
Q150 PEAKING AMP
Q154 BUFFER
Q111, 151-153 CHARACTER SW
Q155 RF AGC T.C.
IC108 RF AGC, DOC DET
Q108 CHROMA MUTE
Q107 BUFFER
Q167 ACK DET
Q109, 110 SWITCH
Q156 BUFFER
Q157-159 HALF TRAP
Q160 BUFFER
IC109 Hi8 SOFT LIMITER, Hi8 DET
CXA1509AQ
IC110 S VIDEO/EE CHROMA SELECT
NJM2234M
Q164, 166 CHROMA PHASE CONT
Q493 SWITCH
Q161-1 12dB A

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	

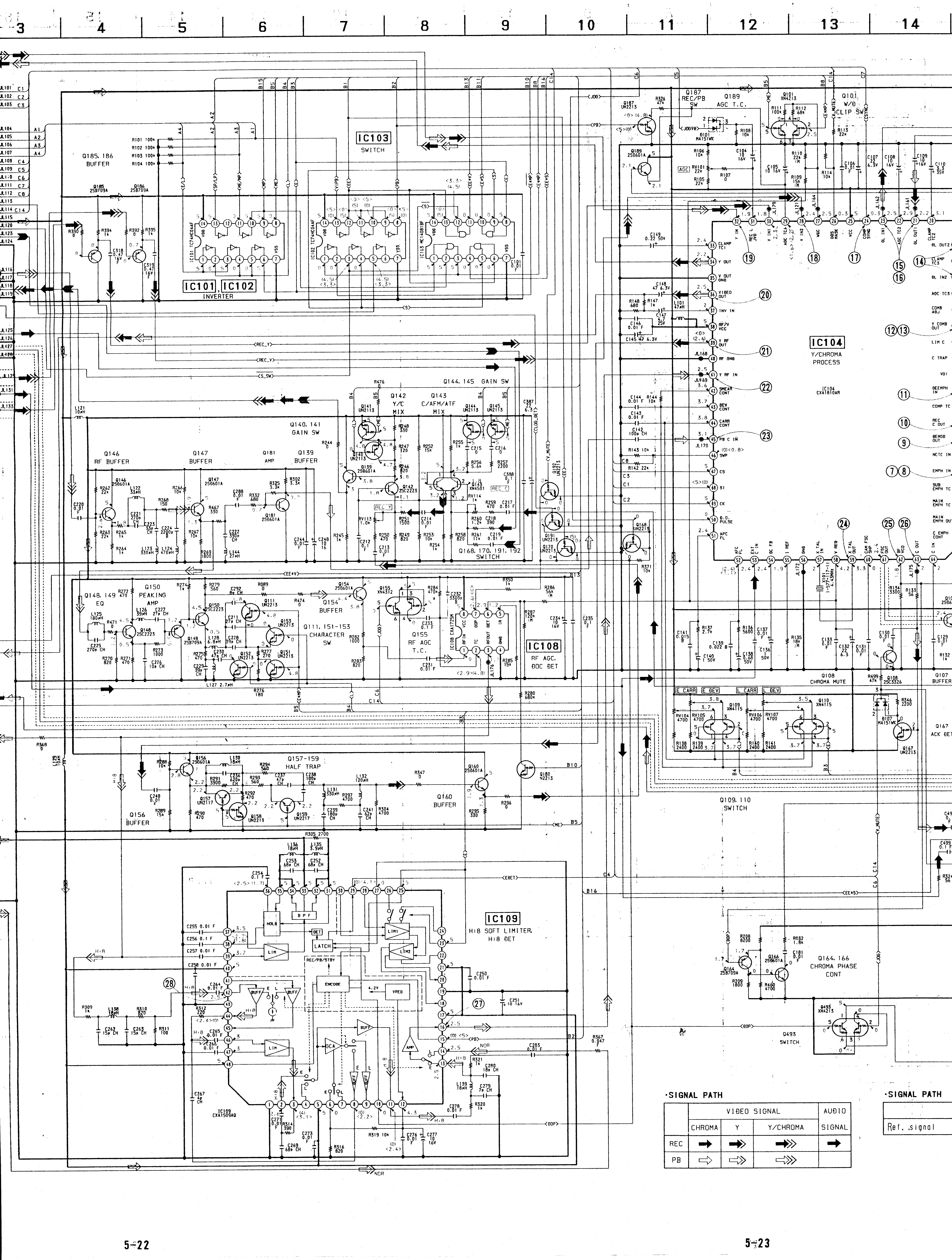
·SIGNAL PATH

	RE
Ref. signal	➡

IC DIAGRAM

s —

• Refer to page 5-12 for Printed Wiring Board.



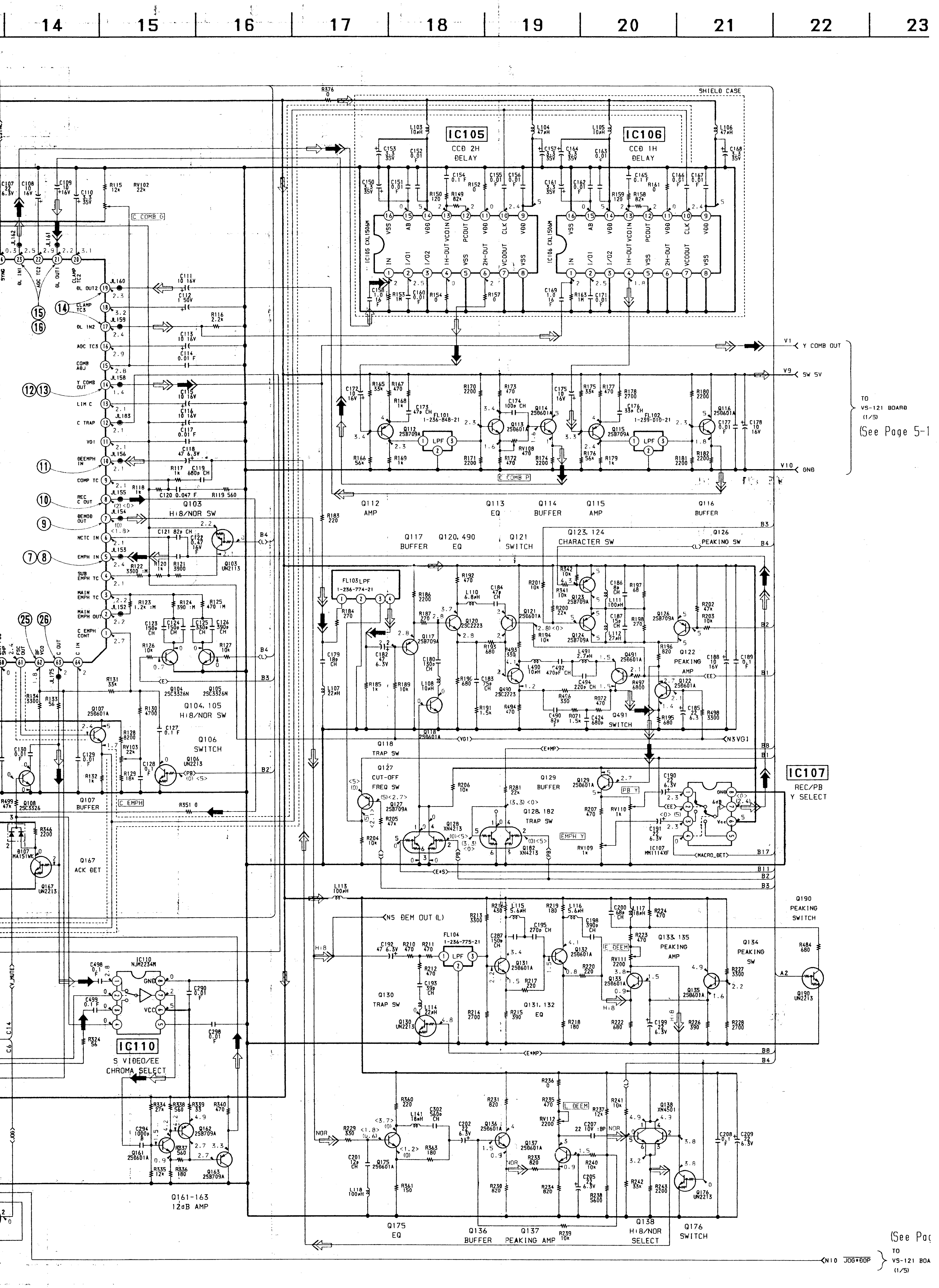
3
4
5
6
7
8
9
10
11
12
13
14
Q185, 186 BUFFER
IC101, IC102 INVERTER
IC103 SWITCH
Q187 REC/PB SW
Q189 AGC T.C.
Q101 W/D CLIP SW
IC104 Y/CHROMA PROCESS
Q144, 145 GAIN SW
Q142 Y/C MIX
Q143 C/AFM/ATF MIX
Q140, 141 GAIN SW
Q146 RF BUFFER
Q147 BUFFER
Q181 AMP
Q139 BUFFER
Q168, 170, 191, 192 SWITCH
Q148, 149 EQ
Q150 PEAKING AMP
Q154 BUFFER
Q111, 151-153 CHARACTER SW
Q155 RF AGC T.C.
IC108 RF AGC, DOC DET
Q108 CHROMA MUTE
Q107 BUFFER
Q167 ACK DET
Q157-159 HALF TRAP
Q160 BUFFER
Q156 BUFFER
Q109, 110 SWITCH
IC109 Hi8 SOFT LIMITER, Hi8 DET
Q164, 166 CHROMA PHASE CONT
Q493 SWITCH

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	

·SIGNAL PATH

Ref. signal


14
15
16
17
18
19
20
21
22
23
SHIELD CASE
IC105
CCD 2H DELAY
IC106
CCD 1H DELAY
CXL1506M
V1 Y COMB OUT
V9 SW 5V
V10 GND
TO VS-121 BOARD (1/5)
(See Page 5-1
Q112 AMP
Q113 EQ
Q114 BUFFER
Q115 AMP
Q116 BUFFER
Q103 H18/NOR SW
Q104, 105 H18/NOR SW
Q106 SWITCH
Q107 BUFFER
Q167 ACK DET
Q117 BUFFER
Q120, 490 EQ
Q121 SWITCH
Q123, 124 CHARACTER SW
Q126 PEAKING SW
Q122 PEAKING AMP
Q491 SWITCH
Q118 TRAP SW
Q127 CUT-OFF FREQ SW
Q129 BUFFER
Q128, 182 TRAP SW
IC107
REC/PB Y SELECT
MM1114XF
Q130 TRAP SW
Q131, 132 EQ
Q133, 135 PEAKING AMP
Q134 PEAKING SW
Q190 PEAKING SWITCH
IC110
NJM2234M
S VIDEO/EE CHROMA SELECT
Q161-163 12dB AMP
Q175 EQ
Q136 BUFFER
Q137 PEAKING AMP
Q138 H18/NOR SELECT
Q176 SWITCH
N5 DEM OUT (L)
N10 JOG•DDP
(See Pa
TO VS-121 BOA (1/5)
C COMB G
C COMB P
C EMPH
EMPH Y
PB Y
E DEEM
L DEEM
FL103 LPF
FL101
FL102
FL104
N3 VG1

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➤		

VS-121 BOARD (2/5)
(VIDEO2 BLOCK)

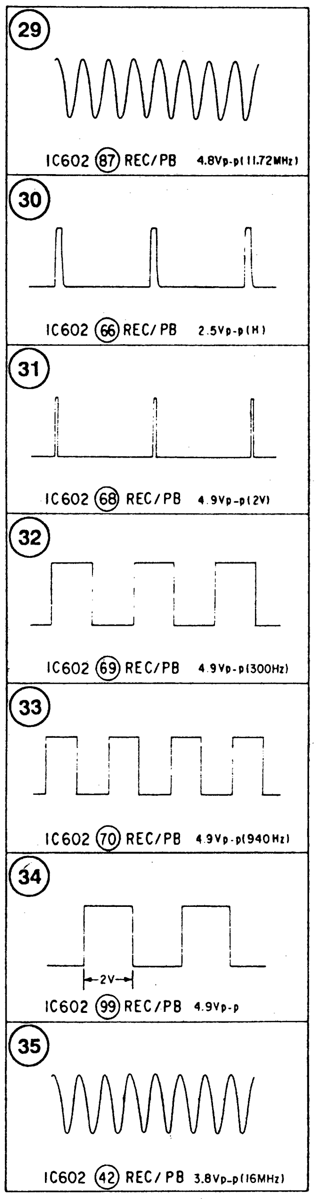
no mark : REC/PB mode
( ) : REC mode
< > : PB mode

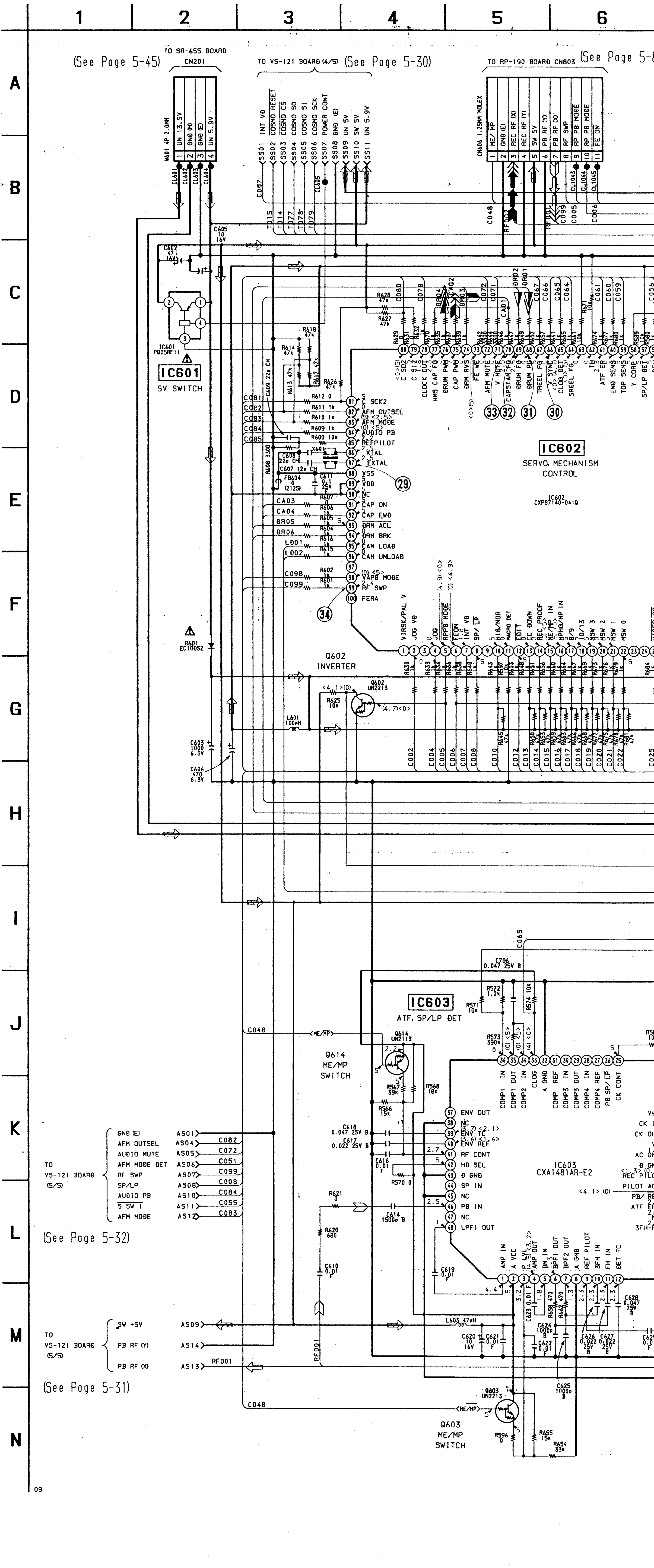
VS-121 (SERVO) SCHEMATIC DIAGRAM

— Ref. No. VS-121 BOARD: 2000 series —

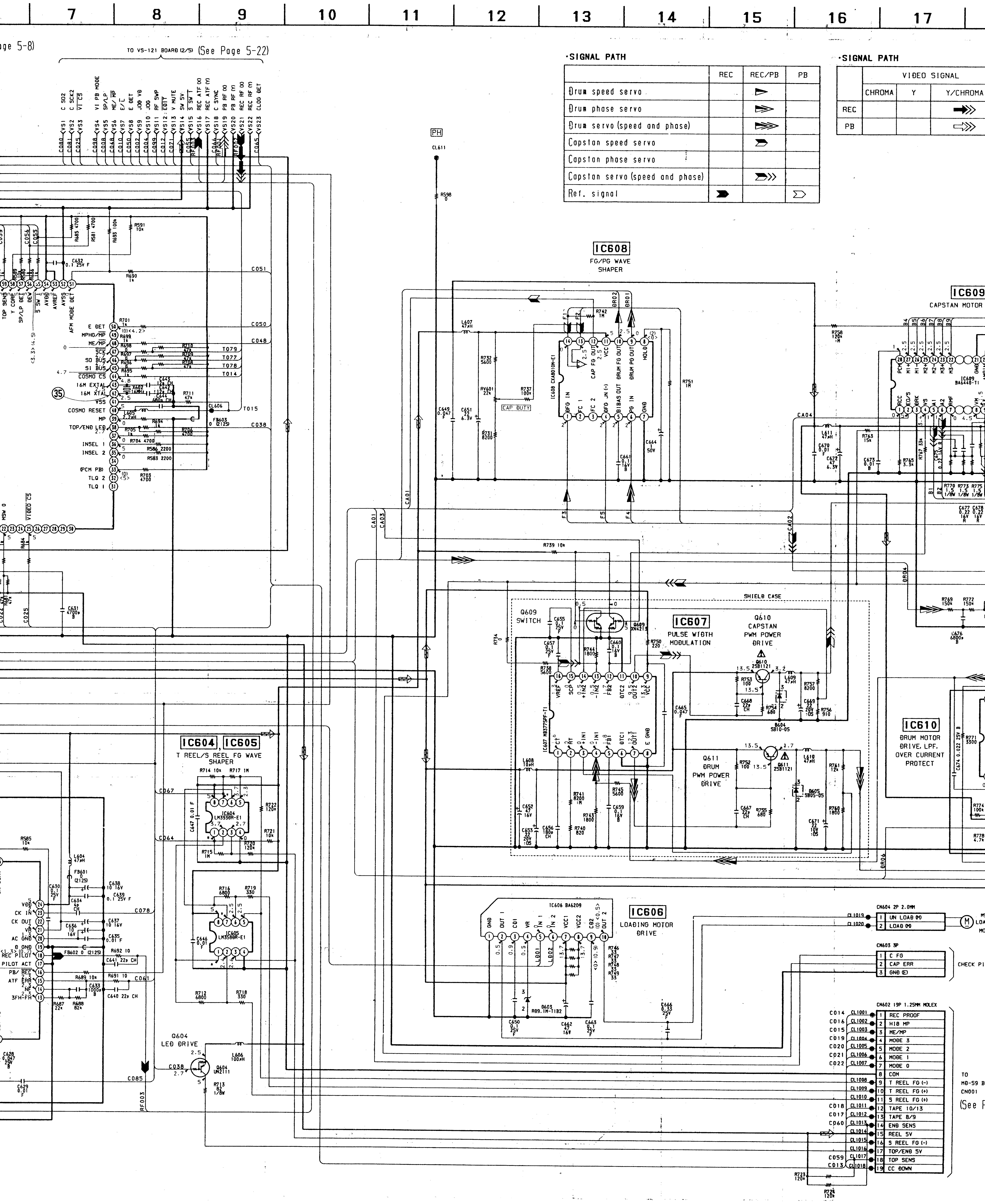
- Refer to page 5-12 for Printed Wiring Board.

VS-121 BOARD (3/5)




1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
K
L
M
N
(See Page 5-45)
TO SR-65S BOARD CN201
(See Page 5-30)
TO VS-121 BOARD (4/5)
TO RP-190 BOARD CN803
IC601
5V SWITCH
IC601 PQ05RF11
IC602
SERVO, MECHANISM CONTROL
IC602 CXP87140-041Q
Q602 INVERTER
Q602 UN2213
IC603
ATF, SP/LP DET
IC603 CXA1481AR-E2
Q614 ME/MP SWITCH
Q614 UN2113
Q603 ME/MP SWITCH
Q603 UN2213
TO VS-121 BOARD (5/5)
(See Page 5-32)
(See Page 5-31)
GND (E)
AFM OUTSEL
AUDIO MUTE
AFM MODE DET
RF SWP
SP/LP
AUDIO PB
5 SW 1
AFM MODE
SW +5V
PB RF (Y)
PB RF (X)
SCK2
AFM OUTSEL
AFM MODE
AUDIO PB
REFPILOT
XTAL
EXTAL
VSS
VDD
NC
CAP ON
CAP FWD
DRM ACL
DRM BRK
CAM LOAD
CAM UNLOAD
VAPB MODE
RF SWP
FERA
ENV OUT
NC
ENV TC
ENV REF
RF CONT
HD SEL
D GND
SP IN
NC
PB IN
NC
LPF1 OUT
R601 EC10052
L601 100μH
09

Board.


7
8
9
10
11
12
13
14
15
16
17
ge 5-8)
TO VS-121 BOARD (2/5) (See Page 5-22)
IC608
FG/PG WAVE SHAPER
IC609
CAPSTAN MOTOR
IC607
PULSE WIDTH MODULATION
Q609 SWITCH
Q610 CAPSTAN PWM POWER DRIVE
Q611 DRUM PWM POWER DRIVE
SHIELD CASE
IC610
DRUM MOTOR DRIVE, LPF, OVER CURRENT PROTECT
IC604 IC605
T REEL/S REEL FG WAVE SHAPER
IC606
LOADING MOTOR DRIVE
Q604 LED DRIVE
CAP DUTY
CN604 2P 2.0MM
UN LOAD (M)
LOAD (M)
CN603 3P
C FG
CAP ERR
GND (E)
CHECK PI
CN602 19P 1.25MM MOLEX
REC PROOF
H18 MP
ME/MP
MODE 3
MODE 2
MODE 1
MODE 0
COM
T REEL FG (-)
T REEL FG (+)
S REEL FG (+)
TAPE 10/13
TAPE 8/9
END SENS
REEL 5V
S REEL FG (-)
TOP/END 5V
TOP SENS
CC DOWN
TO MD-59 B CN001
(See F

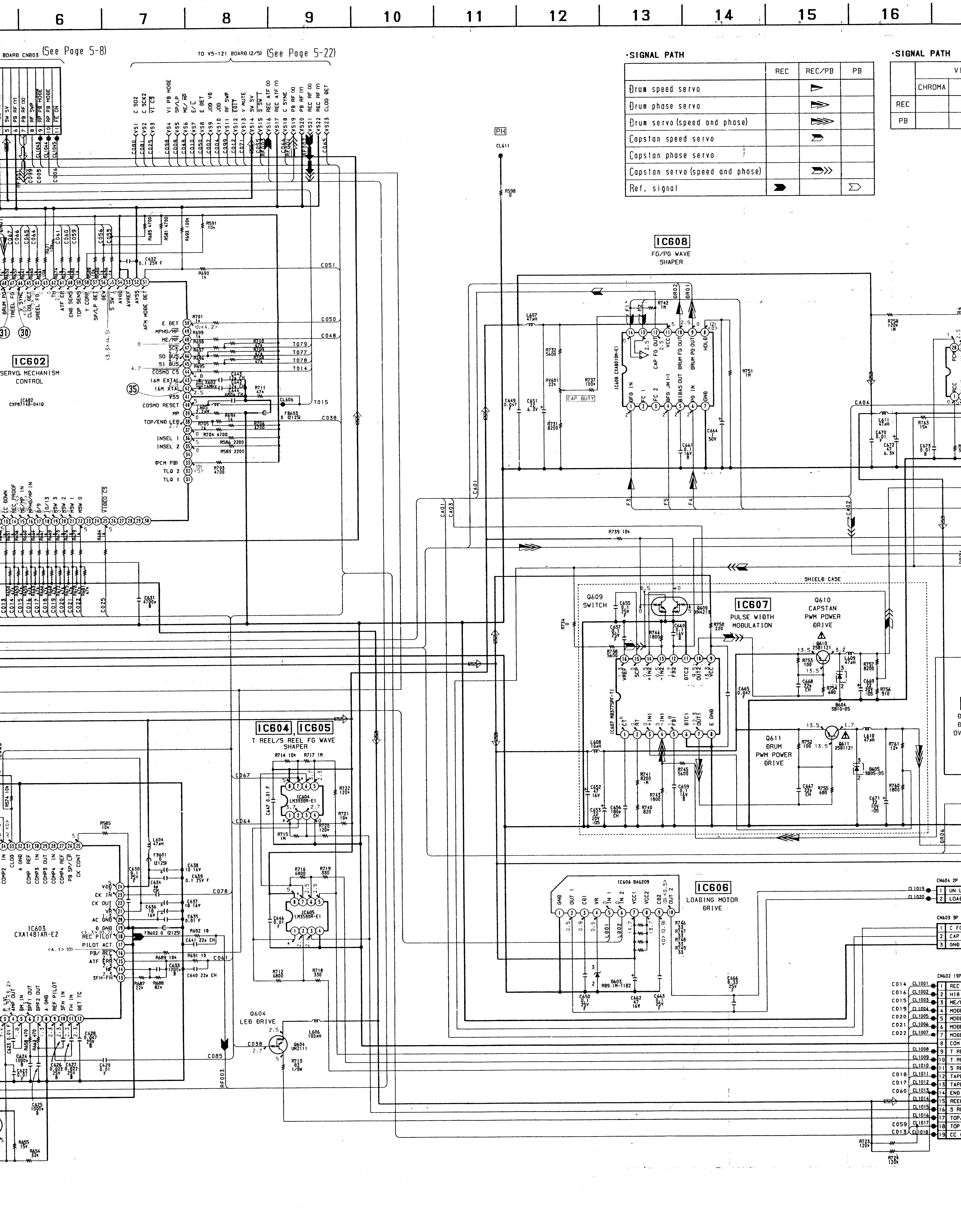
·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		➤	
Drum phase servo		➤➤	
Drum servo (speed and phase)		➤➤➤	
Capstan speed servo		➤	
Capstan phase servo			
Capstan servo (speed and phase)		➤»	
Ref. signal	➧		▷

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡»
PB			⇨»

or Printed Wiring Board.



6
7
8
9
10
11
12
13
14
15
16
BOARD CN803 (See Page 5-8)
TO VS-121 BOARD (2/5) (See Page 5-22)
IC602
SERVO, MECHANISM CONTROL
IC602 CXP87140-041Q
IC603 CXA1481AR-E2
IC604, IC605
T REEL/S REEL FG WAVE SHAPER
IC604 LM3930R-E1
IC605 LM3580R-E1
IC608
FG/PG WAVE SHAPER
IC608 CXA8010M-E1
IC607
PULSE WIDTH MODULATION
IC607 M83775PF-T1
Q609 SWITCH
Q610 CAPSTAN PWM POWER DRIVE
Q611 DRUM PWM POWER DRIVE
IC606
LOADING MOTOR DRIVE
IC606 BA6209
Q604 LED DRIVE
SHIELD CASE
CAP DUTY
PH
CL611
CN604 2P
CN603 3P
CN602 19P

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo		▱	
Capstan phase servo			
Capstan servo (speed and phase)		▱››	
Ref. signal	➤		▷

·SIGNAL PATH

	V
	CHROMA
REC	
PB	

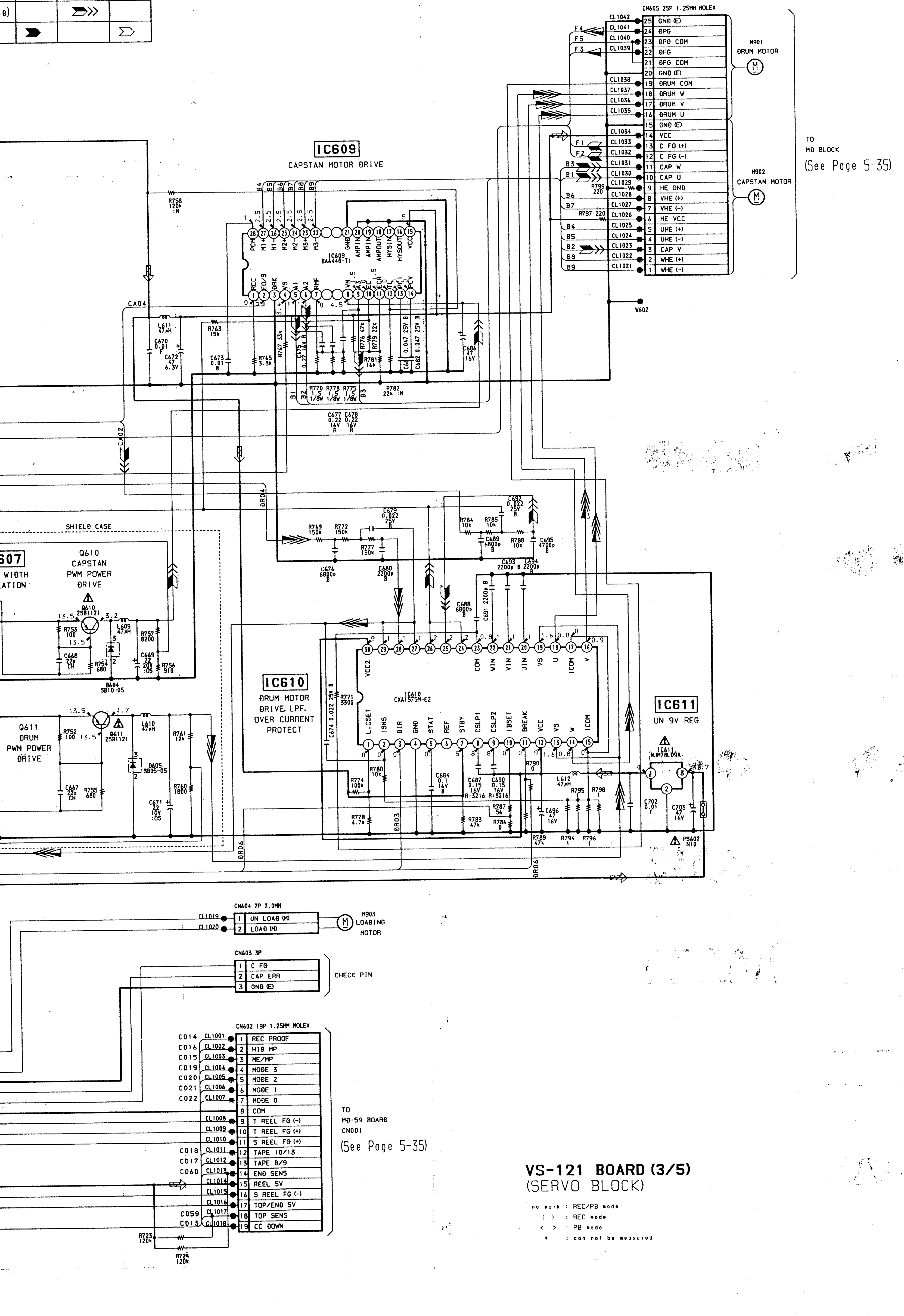
15 16 17 18 19 20 21 22

	REC	REC/PB	PB
		▷	
		⫸	
		⋙	
		➢	
e)		➢》	
	➧		⊃

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡》	➡
PB			⇨》	⇨

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.


CN605 25P 1.25MM MOLEX
25 GND (E)
24 DPG
23 DPG COM
22 DFG
21 DFG COM
20 GND (E)
19 DRUM COM
18 DRUM W
17 DRUM V
16 DRUM U
15 GND (E)
14 VCC
13 C FG (+)
12 C FG (-)
11 CAP W
10 CAP U
9 HE GND
8 VHE (+)
7 VHE (-)
6 HE VCC
5 UHE (+)
4 UHE (-)
3 CAP V
2 WHE (+)
1 WHE (-)
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
TO MD BLOCK
(See Page 5-35)
IC609
CAPSTAN MOTOR DRIVE
IC609 BA6440-T1
W602
SHIELD CASE
Q610 CAPSTAN PWM POWER DRIVE
Q611 DRUM PWM POWER DRIVE
IC610
DRUM MOTOR DRIVE, LPF, OVER CURRENT PROTECT
IC610 CXA1575M-E2
IC611
UN 9V REG
IC611 NJM78L09A
PS602 N10
CN604 2P 2.0MM
1 UN LOAD (M)
2 LOAD (M)
M903 LOADING MOTOR
CN603 3P
1 C FG
2 CAP ERR
3 GND (E)
CHECK PIN
CN602 19P 1.25MM MOLEX
1 REC PROOF
2 HI8 MP
3 ME/MP
4 MODE 3
5 MODE 2
6 MODE 1
7 MODE 0
8 COM
9 T REEL FG (-)
10 T REEL FG (+)
11 S REEL FG (+)
12 TAPE 10/13
13 TAPE 8/9
14 END SENS
15 REEL 5V
16 S REEL FG (-)
17 TOP/END 5V
18 TOP SENS
19 CC DOWN
TO MD-59 BOARD CN001
(See Page 5-35)

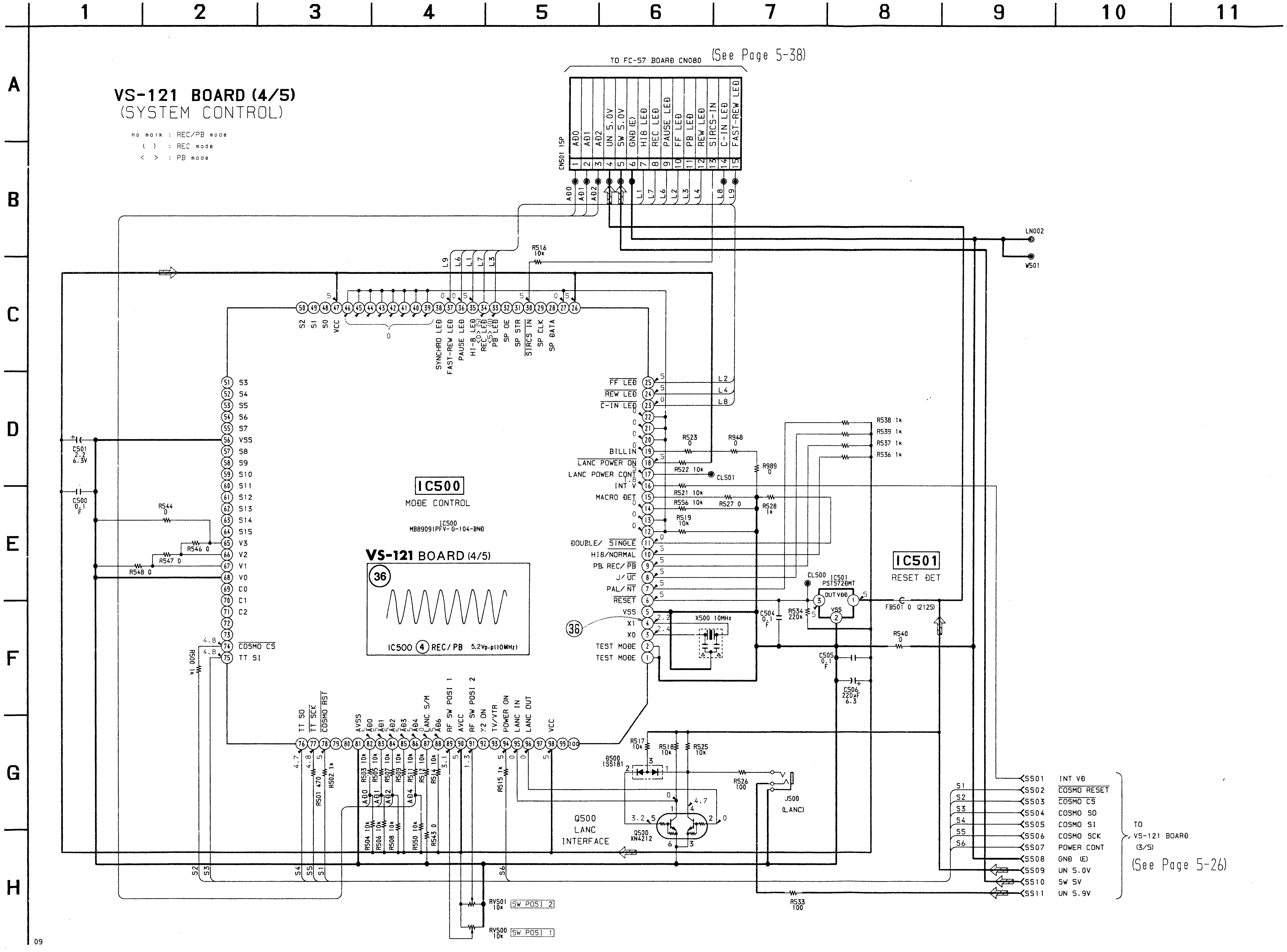
VS-121 BOARD (3/5)
(SERVO BLOCK)

no mark : REC/PB mode
( ) : REC mode
< > : PB mode
* : can not be measured

VS-121 (SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refer to page 5-12 for Printed Wiring Board.

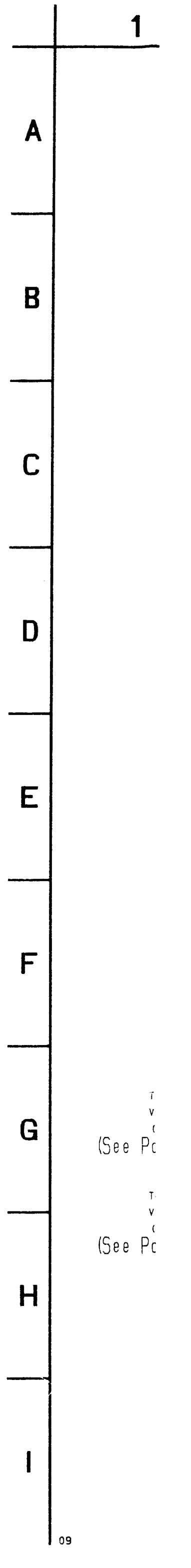
— Ref. No. VS-121 BOARD: 2000 series —



VS-121 BOARD (4/5)
(SYSTEM CONTROL)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
TO FC-57 BOARD CN080
(See Page 5-38)
CN501 15P
1 AD0
2 AD1
3 AD2
4 UN 5.0V
5 SW 5.0V
6 GND (E)
7 HI8 LED
8 REC LED
9 PAUSE LED
10 FF LED
11 PB LED
12 REW LED
13 SIRCS-IN
14 C-IN LED
15 FAST-REW LED
LN002
W501
R516 10k
IC500
MODE CONTROL
IC500 MB89091PFV-G-104-BND
S2 S1 S0 VCC
SYNCHRO LED
FAST-REW LED
PAUSE LED
HI-8 LED
REC LED
PB LED
SP OE
SP STR
SIRCS IN
SP CLK
SP DATA
FF LED
REW LED
C-IN LED
BILLIN
LANC POWER ON
LANC POWER CONT
INT V
MACRO DET
DOUBLE/SINGLE
HI8/NORMAL
PB REC/PB
J/UC
PAL/NT
RESET
VSS
X1
X0
TEST MODE
TEST MODE
S3 S4 S5 S6 S7 VSS S8 S9 S10 S11 S12 S13 S14 S15 V3 V2 V1 V0 C0 C1 C2
COSMO CS
TT SI
TT SO
TT SCK
COSMO RST
AVSS
AD0 AD1 AD2 AD3 AD4
LANC S/M
AD6
RF SW POSI 1
AVCC
RF SW POSI 2
Y2 ON
TV/VTR
POWER ON
LANC IN
LANC OUT
VCC
C501 2.2 6.3V
C500 0.1 F
R544 0
R546 0
R547 0
R548 0
R500 1k
R501 470
R502 1k
R503 10k
R504 10k
R505 10k
R506 10k
R507 10k
R508 10k
R509 10k
R550 10k
R511 10k
R512 10k
R543 0
R514 10k
R515 1k
RV501 10k SW POSI 2
RV500 10k SW POSI 1
R523 0
R948 0
R989 0
R522 10k
CL501
R521 10k
R556 10k
R527 0
R528 1k
R519 10k
R538 1k
R539 1k
R537 1k
R536 1k
VS-121 BOARD (4/5)
36
IC500 4 REC/PB 5.2Vp-p(10MHz)
X500 10MHz
C504 0.1 F
R534 220k
CL500
IC501 PST572DMT
OUT VDD VSS
IC501
RESET DET
FB501 0 (2125)
R540 0
C505 0.1 F
C506 220μF 6.3
R517 10k
R518 10k
R525 10k
D500 1SS181
R526 100
J500 (LANC)
Q500 LANC INTERFACE
Q500 XN4212
R533 100
S1 S2 S3 S4 S5 S6
SS01 INT VD
SS02 COSMO RESET
SS03 COSMO CS
SS04 COSMO SO
SS05 COSMO SI
SS06 COSMO SCK
SS07 POWER CONT
SS08 GND (E)
SS09 UN 5.0V
SS10 SW 5V
SS11 UN 5.9V
TO VS-121 BOARD (3/5)
(See Page 5-26)
1 2 3 4 5 6 7 8 9 10 11
A B C D E F G H
09

VS-121 (AUD

— Ref. No. VS-1

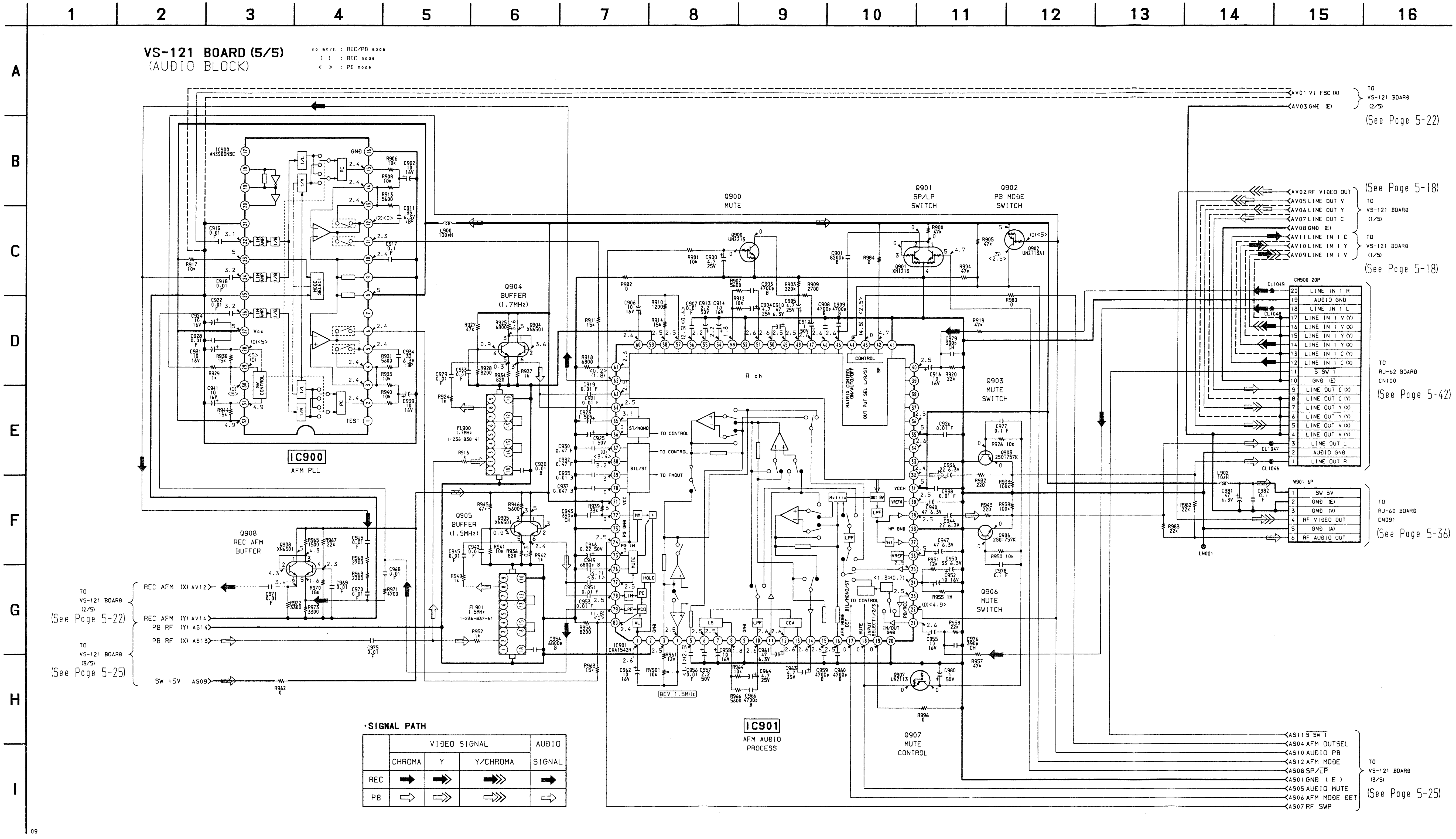


1
A B C D E F G H I
(See Pa
(See Pa
09

VS-121 (AUDIO) SCHEMATIC DIAGRAM

• Refer to page 5–12 for Printed Wiring Board.

— Ref. No. VS-121 BOARD: 2000 series —

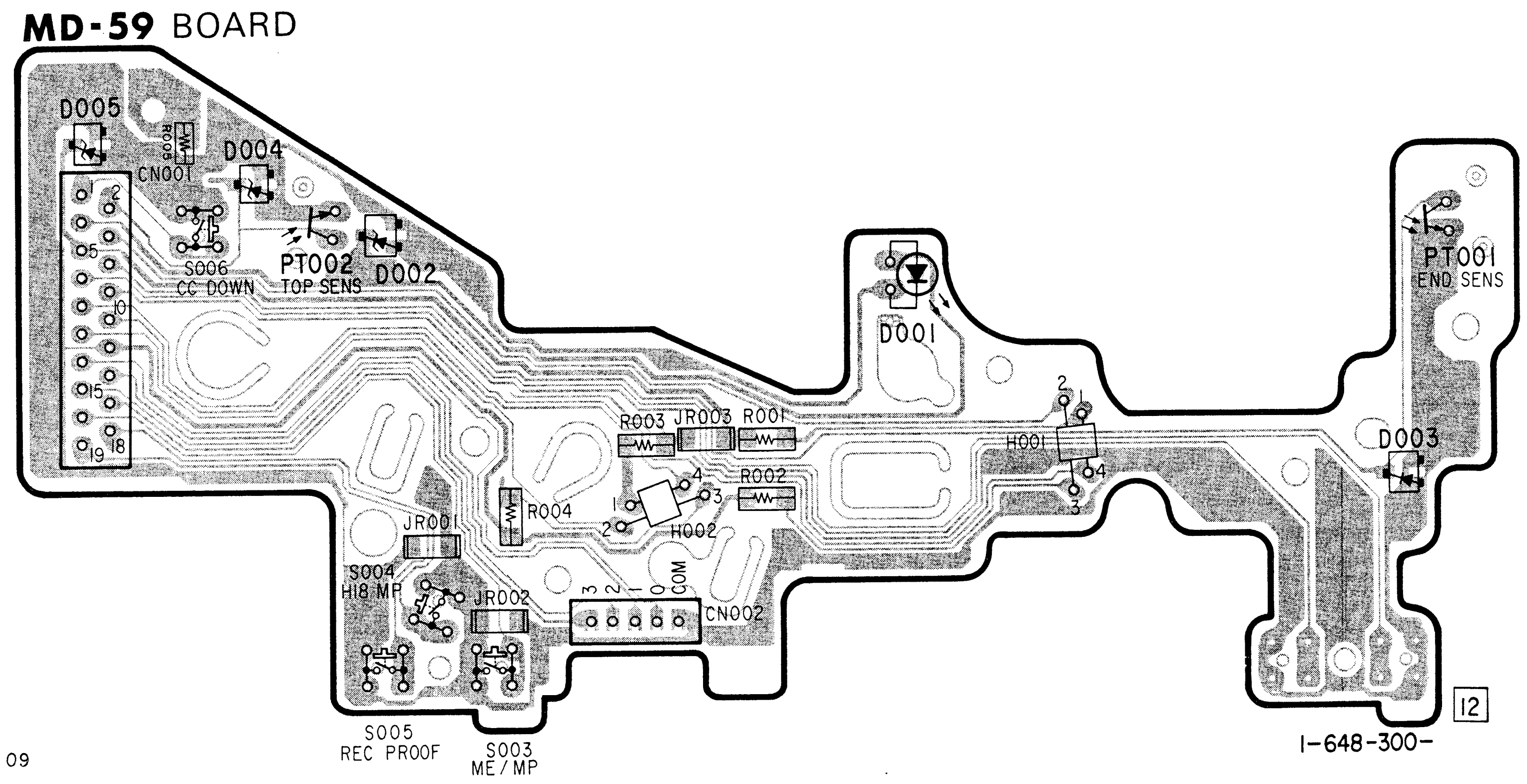

VS-121 BOARD (5/5)
(AUDIO BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
IC900
AFM PLL
IC901
AFM AUDIO PROCESS
Q900 MUTE
Q901 SP/LP SWITCH
Q902 PB MODE SWITCH
Q903 MUTE SWITCH
Q904 BUFFER (1.7MHz)
Q905 BUFFER (1.5MHz)
Q906 MUTE SWITCH
Q907 MUTE CONTROL
Q908 REC AFM BUFFER
FL900
FL901
TO VS-121 BOARD (2/5) (See Page 5-22)
TO VS-121 BOARD (3/5) (See Page 5-25)
TO VS-121 BOARD (1/5) (See Page 5-18)
TO RJ-62 BOARD CN100 (See Page 5-42)
TO RJ-60 BOARD CN091 (See Page 5-36)
REC AFM (X) AV12
REC AFM (Y) AV14
PB RF (Y) AS14
PB RF (X) AS13
SW +5V AS09
AV01 VI FSC (X)
AV03 GND (E)
AV02 RF VIDEO OUT
AV05 LINE OUT V
AV06 LINE OUT Y
AV07 LINE OUT C
AV08 GND (E)
AV11 LINE IN 1 C
AV10 LINE IN 1 Y
AV09 LINE IN 1 V
CN900 20P
20 LINE IN 1 R
19 AUDIO GND
18 LINE IN 1 L
17 LINE IN 1 V (Y)
16 LINE IN 1 V (X)
15 LINE IN 1 Y (Y)
14 LINE IN 1 Y (X)
13 LINE IN 1 C (Y)
12 LINE IN 1 C (X)
11 S SW T
10 GND (E)
9 LINE OUT C (X)
8 LINE OUT C (Y)
7 LINE OUT Y (X)
6 LINE OUT Y (Y)
5 LINE OUT V (X)
4 LINE OUT V (Y)
3 LINE OUT L
2 AUDIO GND
1 LINE OUT R
W901 6P
1 SW 5V
2 GND (E)
3 GND (V)
4 RF VIDEO OUT
5 GND (A)
6 RF AUDIO OUT
AS11 S SW T
AS04 AFM OUTSEL
AS10 AUDIO PB
AS12 AFM MODE
AS08 SP/LP
AS01 GND (E)
AS05 AUDIO MUTE
AS06 AFM MODE DET
AS07 RF SWP
DEV 1.5MHz
R ch

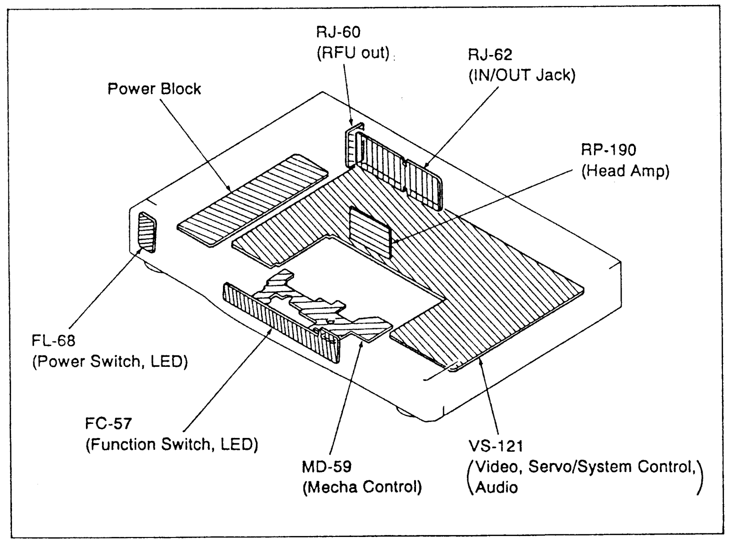
•SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»	➡
PB	⇨	⇨»	⇨»	⇨

MD-59 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. MD-59 BOARD: 3000 series —


MD-59 BOARD
D005
R005
CN001
D004
S006
CC DOWN
PT002
TOP SENS
D002
D001
PT001
END SENS
D003
R003
JR003
R001
R002
H001
R004
H002
JR001
S004
HI8 MP
JR002
CN002
COM
S005
REC PROOF
S003
ME / MP
1-648-300-
12
09

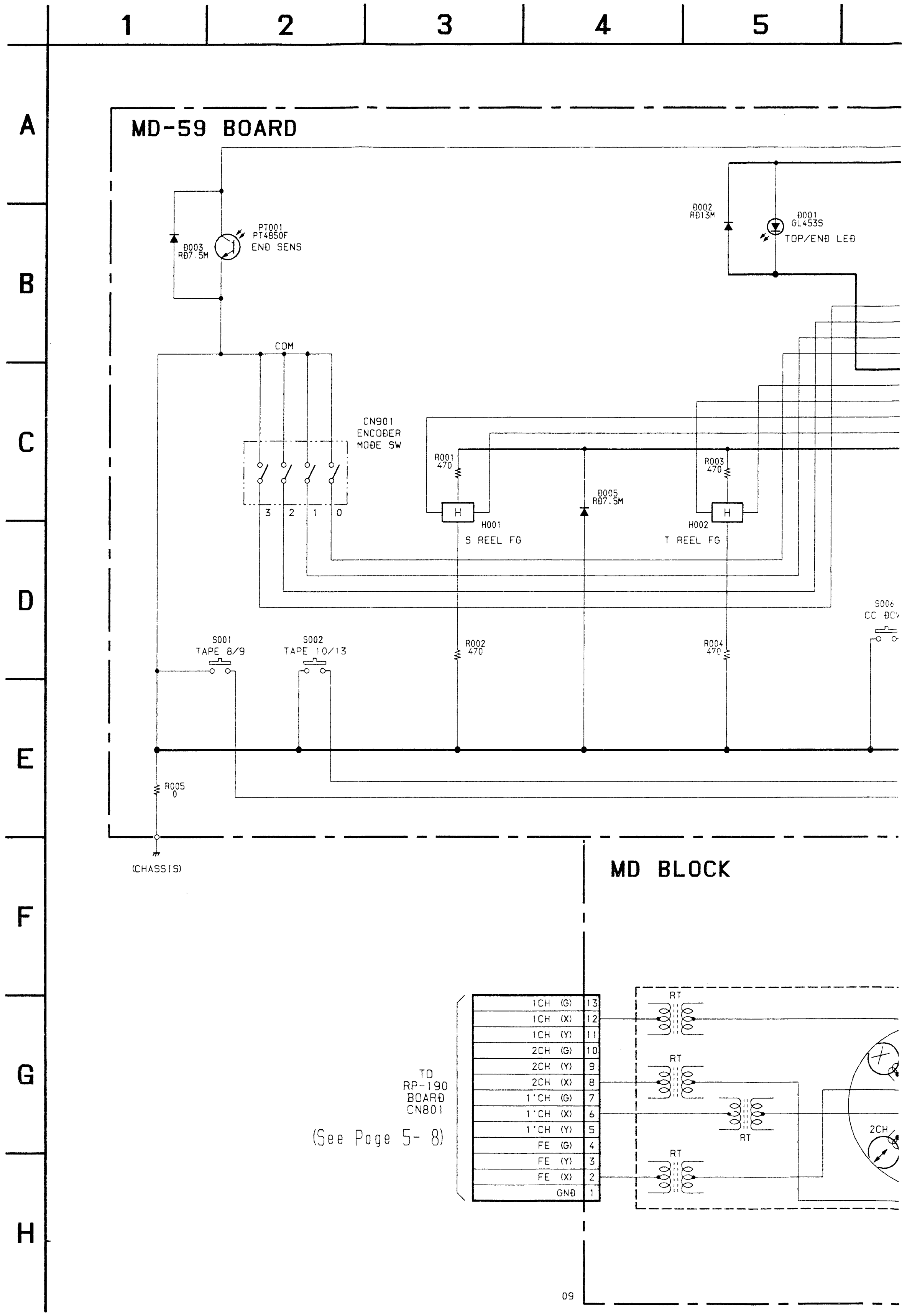

RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

MD-59 (MECHA CONTROL) SCHEMATIC DIAGRAM

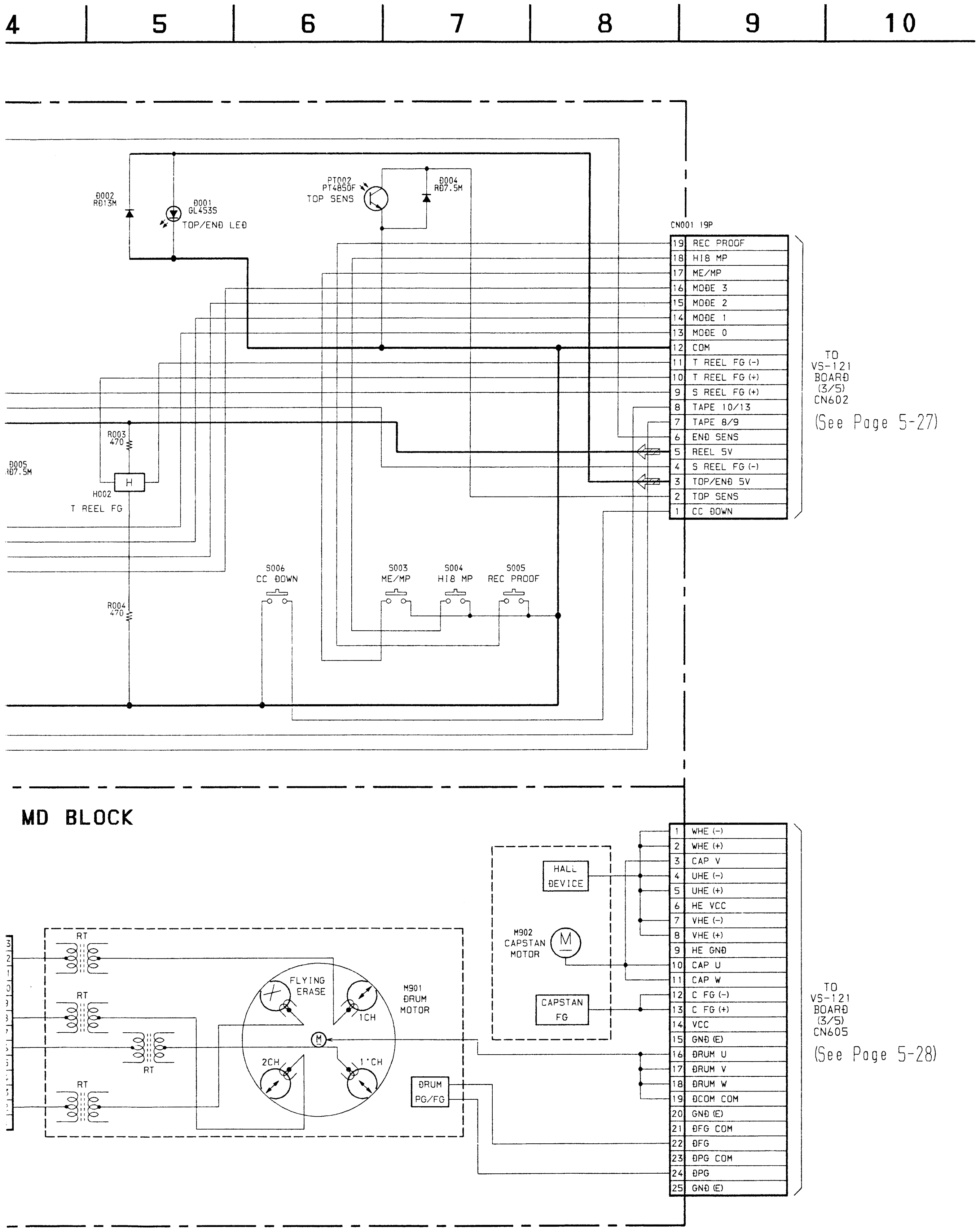
— Ref. No. MD-59 BOARD: 3000 series —

- For schem
- Chip resistor

kΩ : 1000Ω ,

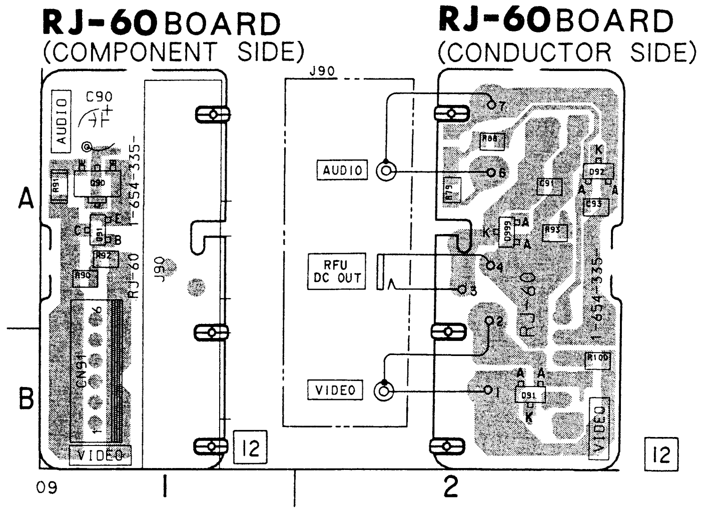

1
2
3
4
5
A
B
C
D
E
F
G
H
MD-59 BOARD
D003
RD7.5M
PT001
PT4850F
END SENS
D002
RD13M
D001
GL453S
TOP/END LED
COM
CN901
ENCODER
MODE SW
3
2
1
0
R001
470
H001
S REEL FG
D005
RD7.5M
R003
470
H002
T REEL FG
S001
TAPE 8/9
S002
TAPE 10/13
R002
470
R004
470
S006
CC DC
R005
0
(CHASSIS)
MD BLOCK
TO
RP-190
BOARD
CN801
(See Page 5- 8)
1CH (G) 13
1CH (X) 12
1CH (Y) 11
2CH (G) 10
2CH (Y) 9
2CH (X) 8
1'CH (G) 7
1'CH (X) 6
1'CH (Y) 5
FE (G) 4
FE (Y) 3
FE (X) 2
GND 1
RT
2CH
09

- **For schematic diagram.**
- Chip resistor are 1/8W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .


4
5
6
7
8
9
10
D002
RD13M
D001
GL453S
TOP/END LED
PT002
PT4850F
TOP SENS
D004
RD7.5M
D005
RD7.5M
R003
470
H
H002
T REEL FG
R004
470
S006
CC DOWN
S003
ME/MP
S004
HI8 MP
S005
REC PROOF
CN001 19P
19 REC PROOF
18 HI8 MP
17 ME/MP
16 MODE 3
15 MODE 2
14 MODE 1
13 MODE 0
12 COM
11 T REEL FG (-)
10 T REEL FG (+)
9 S REEL FG (+)
8 TAPE 10/13
7 TAPE 8/9
6 END SENS
5 REEL 5V
4 S REEL FG (-)
3 TOP/END 5V
2 TOP SENS
1 CC DOWN
TO
VS-121
BOARD
(3/5)
CN602
(See Page 5-27)
MD BLOCK
HALL
DEVICE
M902
CAPSTAN
MOTOR
M
CAPSTAN
FG
RT
FLYING
ERASE
1CH
2CH
1'CH
M
M901
DRUM
MOTOR
DRUM
PG/FG
1 WHE (-)
2 WHE (+)
3 CAP V
4 UHE (-)
5 UHE (+)
6 HE VCC
7 VHE (-)
8 VHE (+)
9 HE GND
10 CAP U
11 CAP W
12 C FG (-)
13 C FG (+)
14 VCC
15 GND (E)
16 DRUM U
17 DRUM V
18 DRUM W
19 DCOM COM
20 GND (E)
21 DFG COM
22 DFG
23 DPG COM
24 DPG
25 GND (E)
TO
VS-121
BOARD
(3/5)
CN605
(See Page 5-28)

RJ-60 (RFU OUT) PRINTED WIRING BOARD

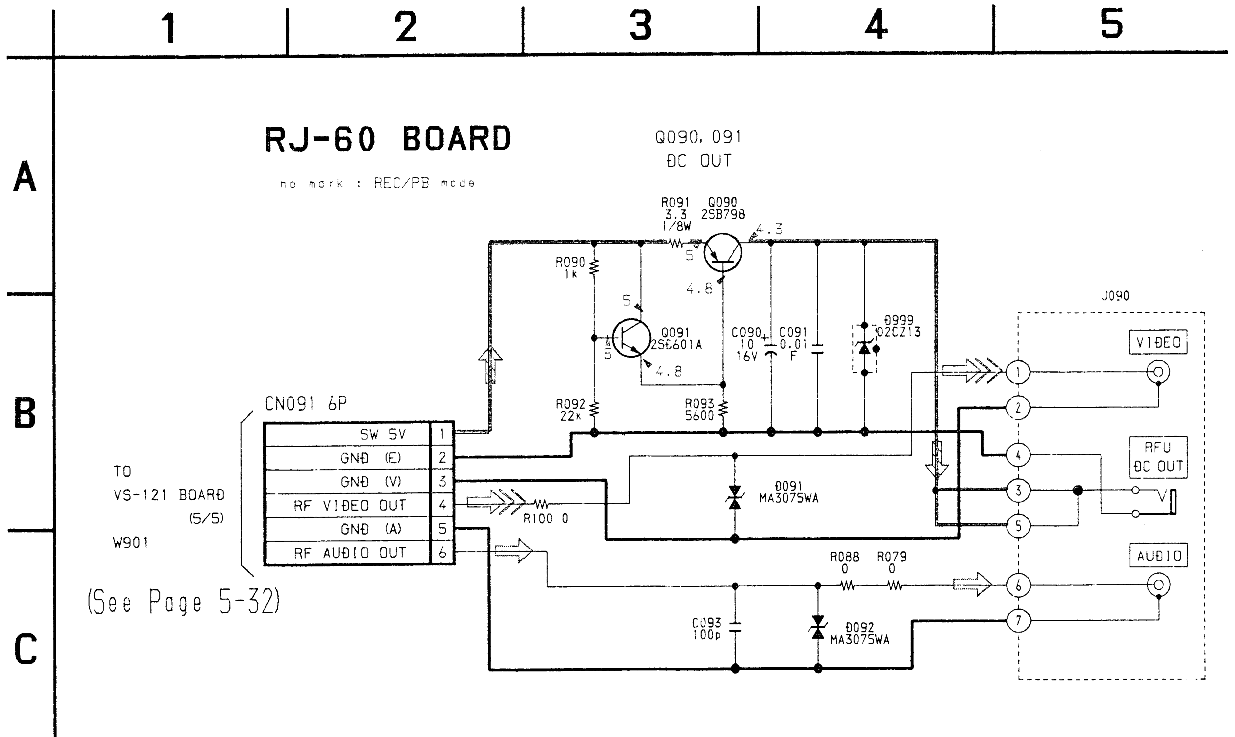
— Ref. No. RJ-60 BOARD: 4000 series —


RJ-60 BOARD
(COMPONENT SIDE)
RJ-60 BOARD
(CONDUCTOR SIDE)
J90
C90
AUDIO
RFU
DC OUT
VIDEO
A
B
09
1
2
12
1-654-335-
RJ-60

RJ-60 BOARD	
CN091	B-1
D091	B-2
D092	A-2
D999	A-2
Q090	A-1
Q091	A-1

RJ-60 (RFU OUT) SCHEMATIC DIAGRAM

— Ref. No. RJ-60 BOARD: 4000 series —


1
2
3
4
5
A
B
C
D
RJ-60 BOARD
no mark : REC/PB mode
Q090, 091
DC OUT
R091
3.3
1/8W
Q090
2SB798
4.3
5
4.8
R090
1k
5
Q091
2SC601A
4.8
C090
10
16V
C091
0.01
F
D999
02CZ13
R092
22k
R093
5600
CN091 6P
SW 5V 1
GND (E) 2
GND (V) 3
RF VIDEO OUT 4
GND (A) 5
RF AUDIO OUT 6
TO
VS-121 BOARD
(5/5)
W901
(See Page 5-32)
R100 0
D091
MA3075WA
R088
0
R079
0
C093
100p
D092
MA3075WA
J090
VIDEO
RFU
DC OUT
AUDIO
09

·SIGNAL PATH

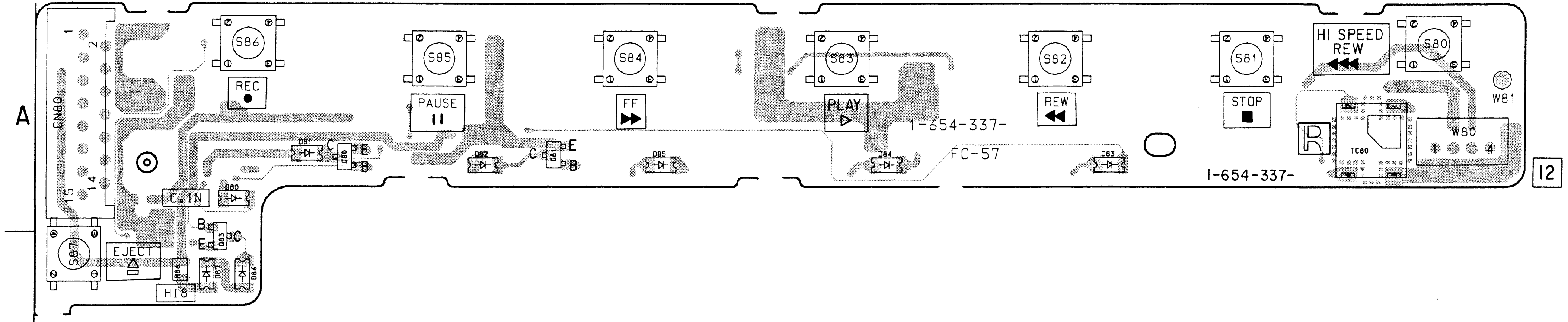
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⇨	⇨

RFU OUT

FC-57 (FUNCTION SWITCH, LED), FL-68 (POWER SWITCH, LED) PRINTED WIRING BOARDS

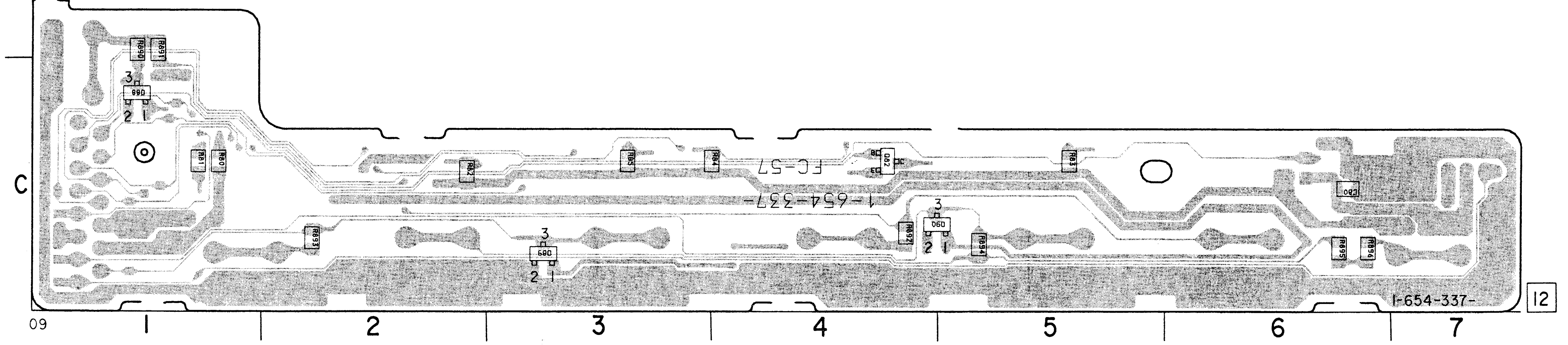
— Ref. No. FC-57 BOARD: 5000 series, FL-68 BOARD: 6000 series —

FC-57 BOARD (COMPONENT SIDE)



A
B
CN080
1
2
15
14
S86
REC
S85
PAUSE
S84
FF
S83
PLAY
S82
REW
S81
STOP
HI SPEED REW
S80
W81
W80
IC80
D81
D82
D83
D84
D85
D86
D87
Q80
Q81
Q83
C.IN
EJECT
S87
HI8
1-654-337-
FC-57
12

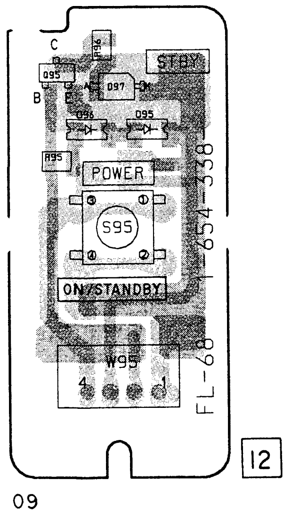
FC-57 BOARD (COMPONENT SIDE)



C
1-654-337-
FC-57
12
09
1
2
3
4
5
6
7

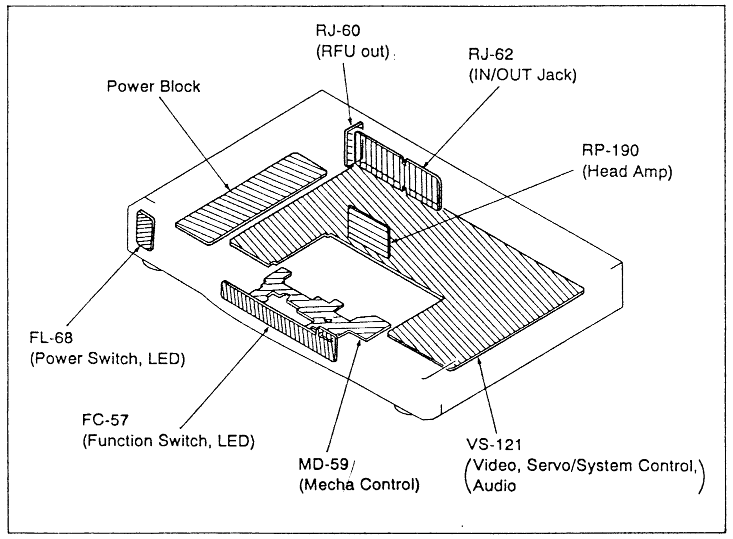
FC-57 BOARD	
CN080	A-1
D080	A-1
D081	A-2
D082	A-2
D083	A-5
D084	A-4
D085	A-3
D086	B-1
D087	B-1
D088	C-1
D089	C-3
D090	C-4
IC080	A-6
Q080	A-2
Q081	A-3
Q082	C-4
Q083	B-1
W080	A-7

FL-68 BOARD



STBY
D97
D96
D95
Q95
R95
POWER
S95
ON/STANDBY
W95
1-654-338-
FL-68
12
09

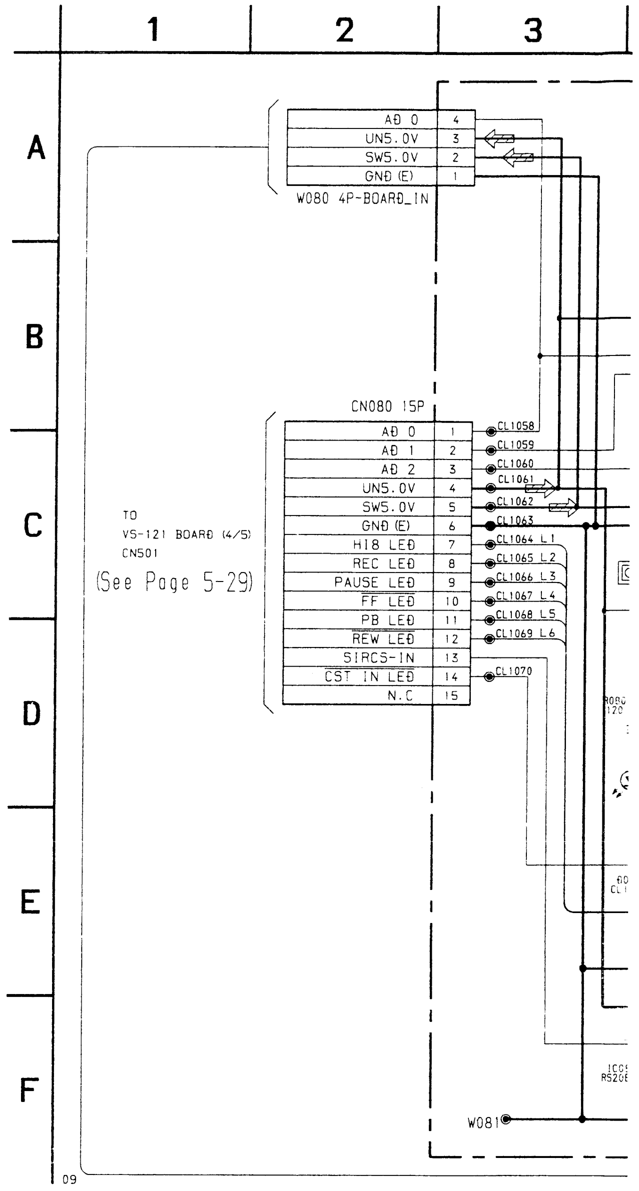
- **For printed wiring board of FL-68 board.**
- ▨ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.



RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59/
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

FC-57 (FUNCTION SWITCH, LED), FL-68 (POWER

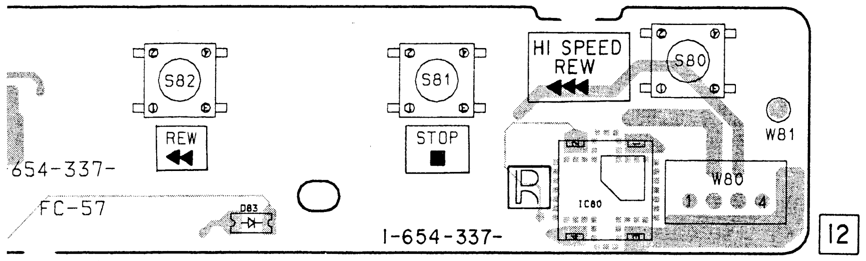
— Ref. No. FC-57 BOARD: 5000 series, FL-68 BOARD: 6000 series —



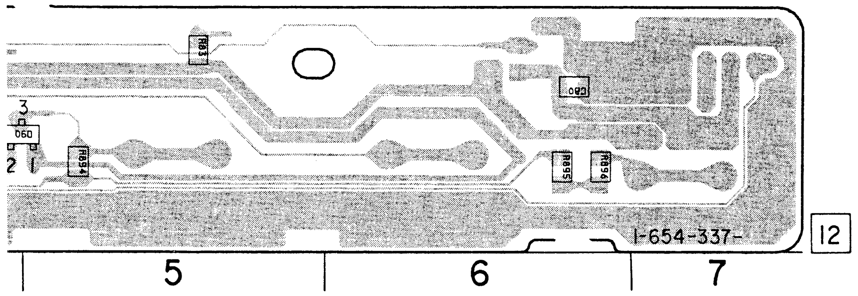
1
2
3
A
B
C
D
E
F
AD 0
UN5.0V
SW5.0V
GND (E)
W080 4P-BOARD_IN
CN080 15P
AD 0
AD 1
AD 2
UN5.0V
SW5.0V
GND (E)
HI8 LED
REC LED
PAUSE LED
FF LED
PB LED
REW LED
SIRCS-IN
CST IN LED
N.C
CL1058
CL1059
CL1060
CL1061
CL1062
CL1063
CL1064 L1
CL1065 L2
CL1066 L3
CL1067 L4
CL1068 L5
CL1069 L6
CL1070
TO
VS-121 BOARD (4/5)
CN501
(See Page 5-29)
W081
09

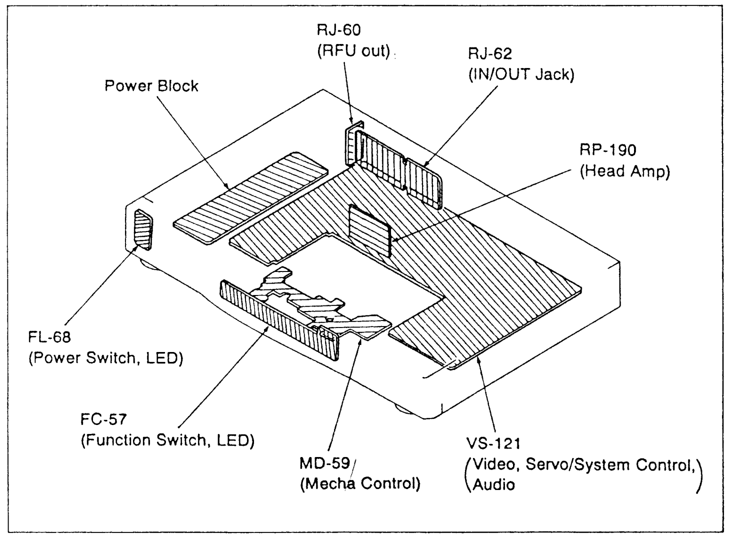
FC-57 (FUNCTION SWITCH, LED), FL-68 (POWER SWITCH, LED) SCHEMATIC DIAGRAMS

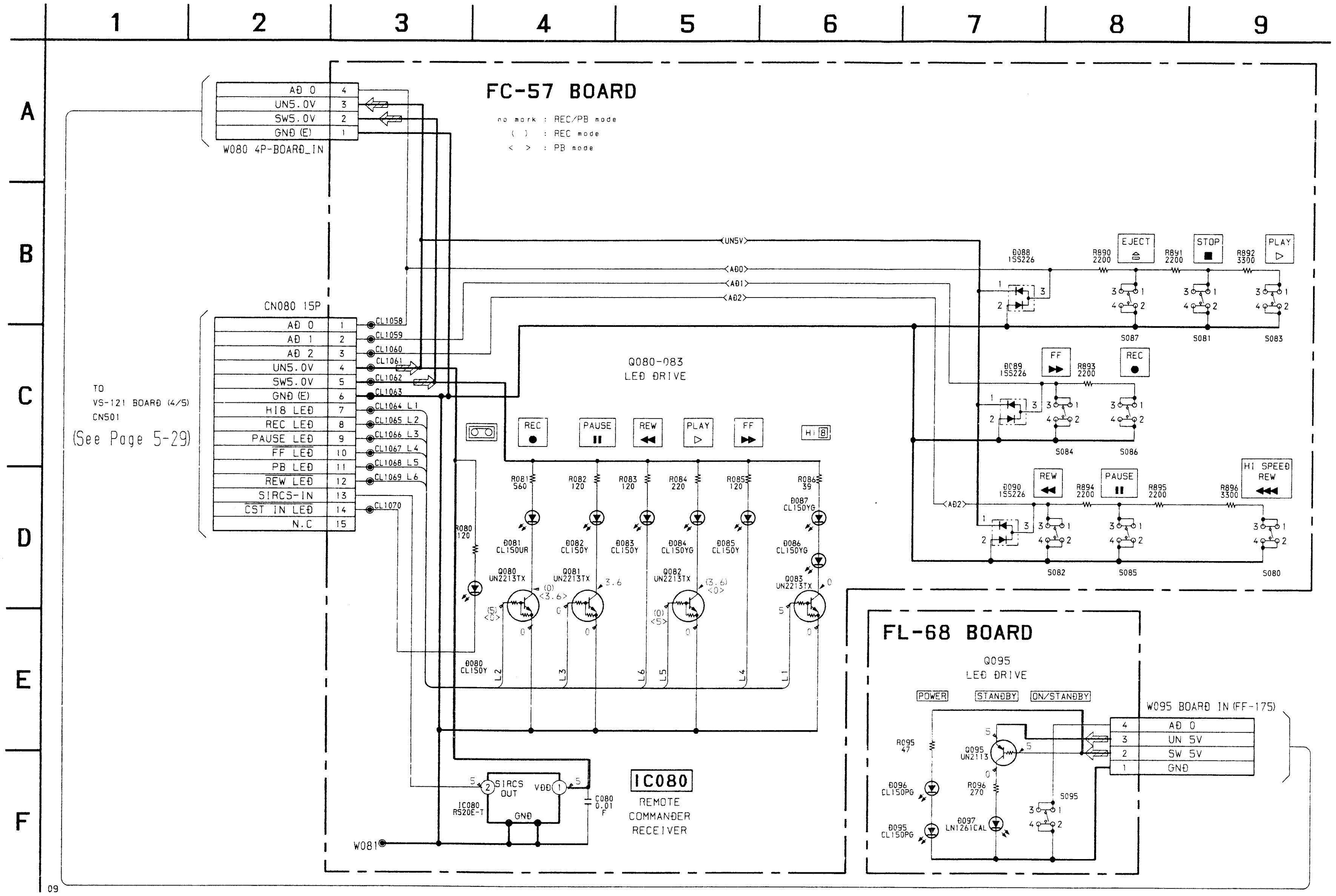
— Ref. No. FC-57 BOARD: 5000 series, FL-68 BOARD: 6000 series —


S82
REW
S81
STOP
HI SPEED
REW
S80
W81
654-337-
FC-57
D83
IC80
W80
1-654-337-
12

FC-57 BOARD	
CN080	A-1
D080	A-1
D081	A-2
D082	A-2
D083	A-5
D084	A-4
D085	A-3
D086	B-1
D087	B-1
D088	C-1
D089	C-3
D090	C-4
IC080	A-6
Q080	A-2
Q081	A-3
Q082	C-4
Q083	B-1
W080	A-7

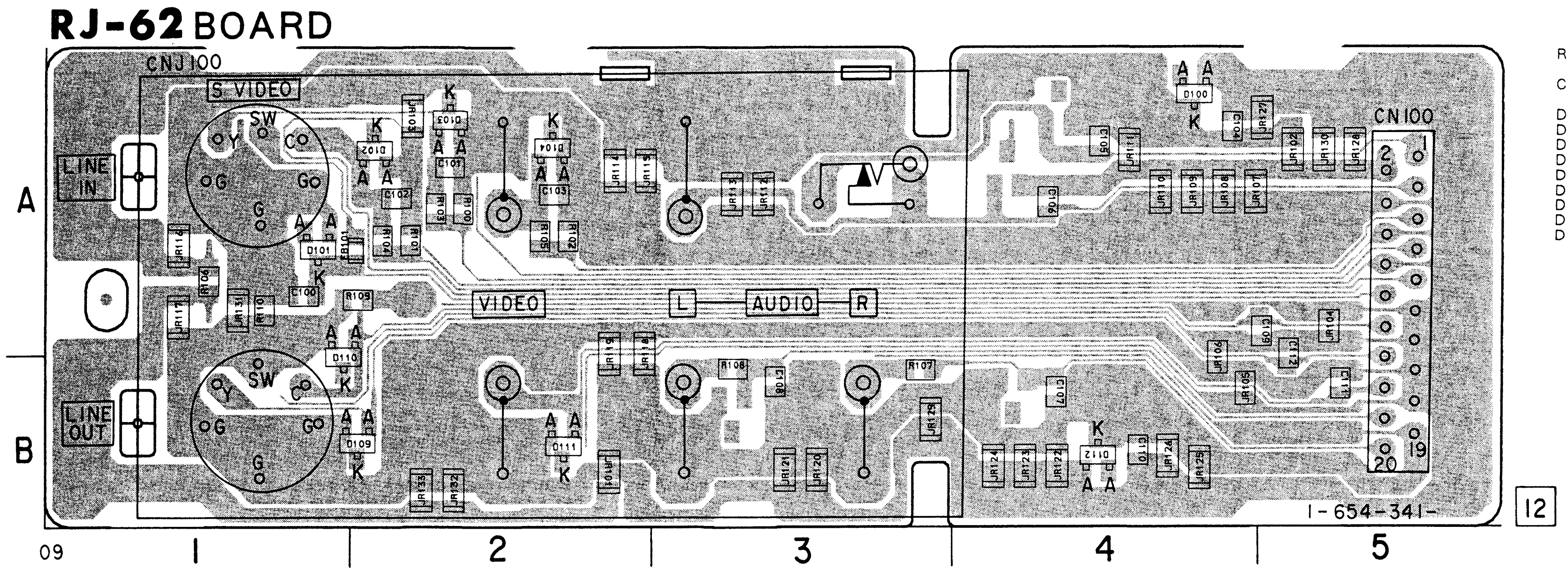

3
D80
2
R894
R083
C80
R895
R896
1-654-337-
12
5
6
7


RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

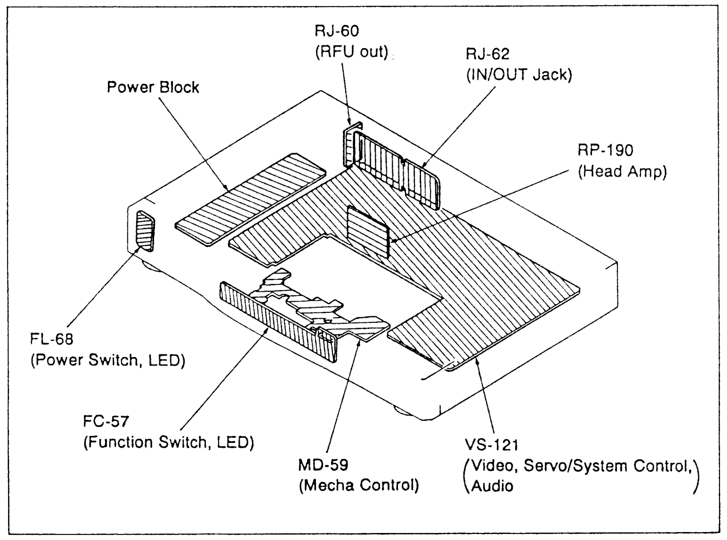

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
FC-57 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
AD 0
UN5.0V
SW5.0V
GND (E)
W080 4P-BOARD_IN
TO
VS-121 BOARD (4/5)
CN501
(See Page 5-29)
CN080 15P
AD 0
AD 1
AD 2
UN5.0V
SW5.0V
GND (E)
HI8 LED
REC LED
PAUSE LED
FF LED
PB LED
REW LED
SIRCS-IN
CST IN LED
N.C
CL1058
CL1059
CL1060
CL1061
CL1062
CL1063
CL1064 L1
CL1065 L2
CL1066 L3
CL1067 L4
CL1068 L5
CL1069 L6
CL1070
<UN5V>
<AD0>
<AD1>
<AD2>
Q080-083
LED DRIVE
REC
PAUSE
REW
PLAY
FF
Hi 8
R080 120
R081 560
R082 120
R083 120
R084 220
R085 120
R086 39
D080 CL150Y
D081 CL150UR
D082 CL150Y
D083 CL150Y
D084 CL150YG
D085 CL150Y
D086 CL150YG
D087 CL150YG
Q080 UN2213TX
Q081 UN2213TX
Q082 UN2213TX
Q083 UN2213TX
(0) <3.6>
(5) <0>
3.6
(3.6) <0>
(0) <5>
L1
L2
L3
L4
L5
L6
D088 1SS226
D089 1SS226
D090 1SS226
R890 2200
R891 2200
R892 3300
R893 2200
R894 2200
R895 2200
R896 3300
EJECT
STOP
PLAY
FF
REC
REW
PAUSE
HI SPEED REW
S087
S081
S083
S084
S086
S082
S085
S080
SIRCS OUT
VDD
GND
IC080 RS20E-T
C080 0.01 F
IC080
REMOTE COMMANDER RECEIVER
W081
FL-68 BOARD
Q095
LED DRIVE
POWER
STANDBY
ON/STANDBY
R095 47
Q095 UN2113
R096 270
D096 CL150PG
D095 CL150PG
D097 LN1261CAL
S095
W095 BOARD IN (FF-175)
AD 0
UN 5V
SW 5V
GND
09

RJ-62 (IN/OUT JACK) PRINTED WIRING BOARD

— Ref. No. RJ-62 BOARD: 7000 series —

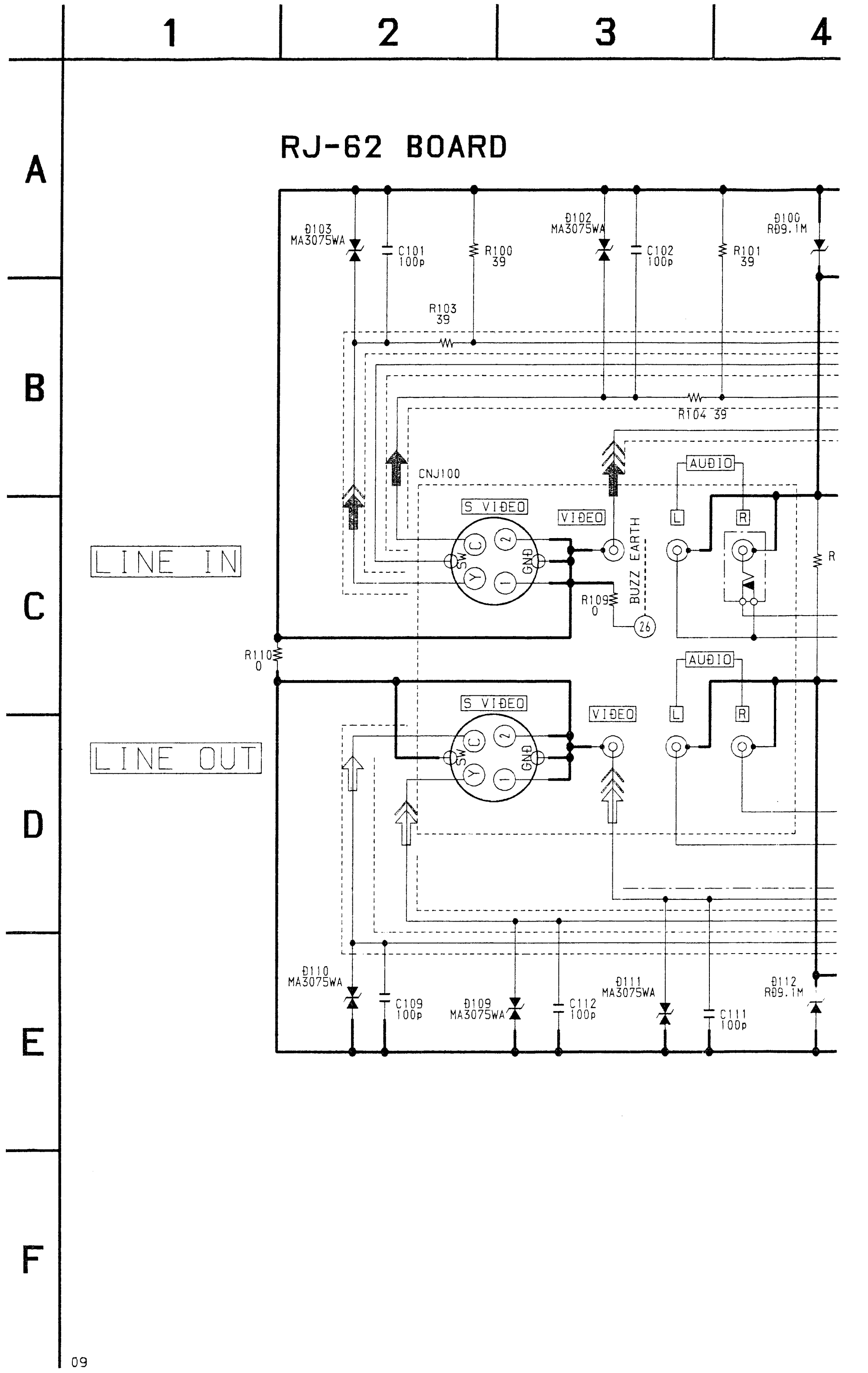

RJ-62 BOARD
CNJ100
S VIDEO
LINE IN
LINE OUT
SW
Y
C
G
VIDEO
L
AUDIO
R
CN100
2
1
20
19
D100
D101
D102
D103
D104
D109
D110
D111
D112
C100
C101
C102
C103
C107
C109
C111
C112
R103
R104
R107
R108
R109
A
K
I-654-341-
12
09
A
B
1
2
3
4
5

RJ-62 BOARD	
CN100	A-5
D100	A-4
D101	A-1
D102	A-2
D103	A-2
D104	A-2
D109	B-2
D110	B-1
D111	B-2
D112	B-4


RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

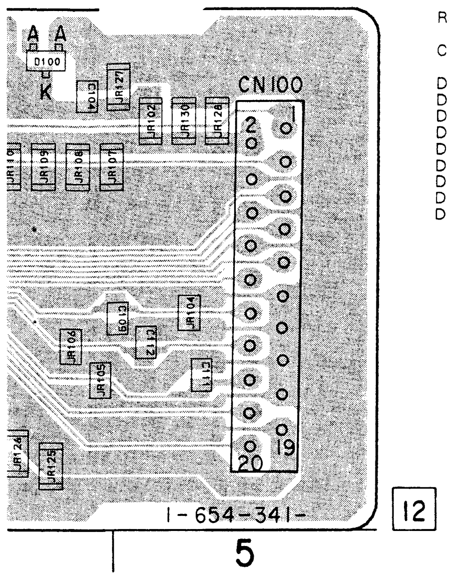
RJ-62 (IN/OUT JACK) SCHEMATIC DIAGRAM

— Ref. No. RJ-62 BOARD: 7000 series —

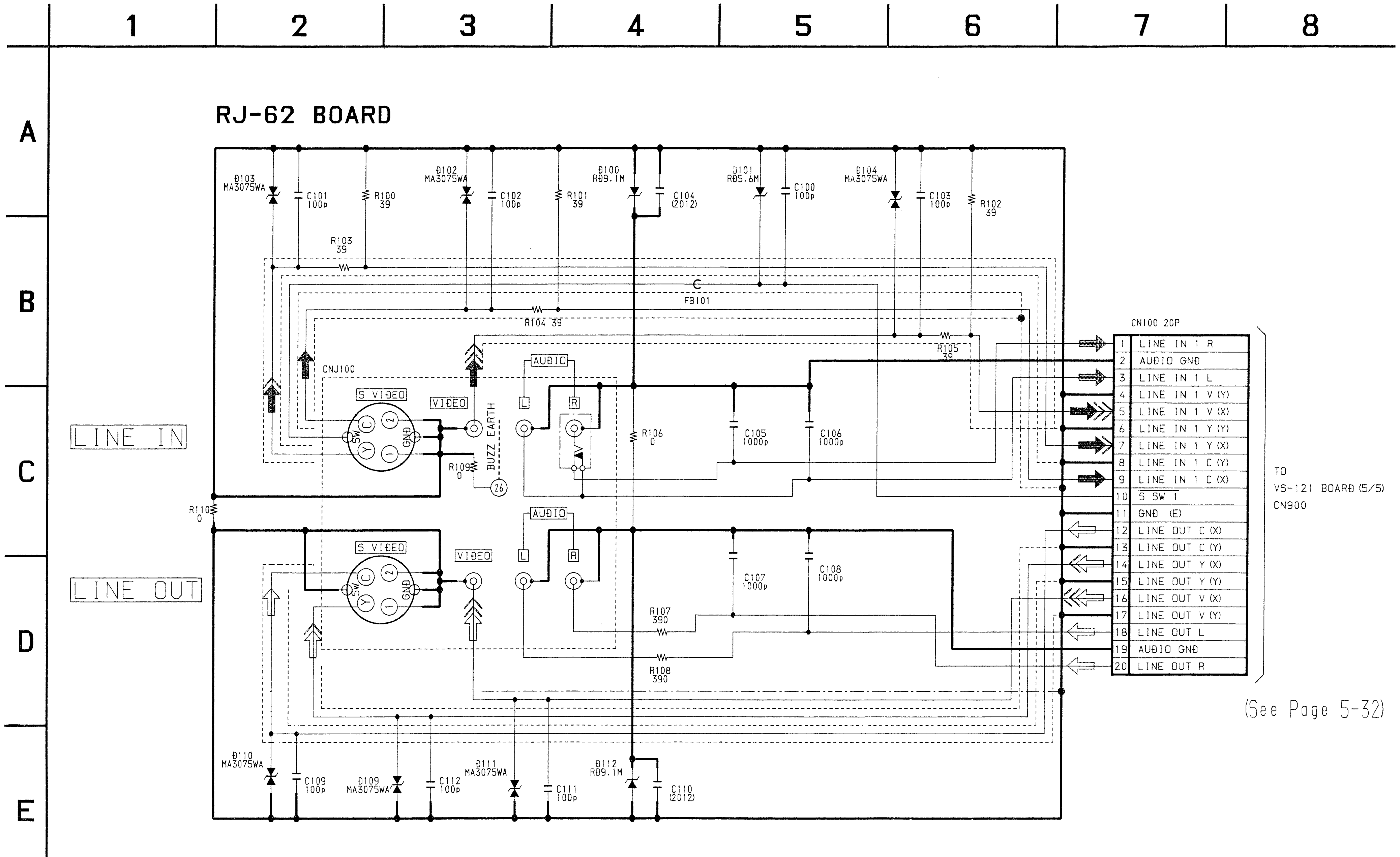

1
2
3
4
A
B
C
D
E
F
RJ-62 BOARD
D103
MA3075WA
C101
100p
R100
39
D102
MA3075WA
C102
100p
R101
39
D100
RD9.1M
R103
39
R104 39
CNJ100
S VIDEO
VIDEO
AUDIO
L
R
SW
C
Y
GND
2
1
BUZZ EARTH
R109
0
26
LINE IN
R110
0
LINE OUT
D110
MA3075WA
C109
100p
D109
MA3075WA
C112
100p
D111
MA3075WA
C111
100p
D112
RD9.1M
R
09

RJ-62 (IN/OUT JACK) SCHEMATIC DIAGRAM

— Ref. No. RJ-62 BOARD: 7000 series —


A
A
D100
K
C104
JR127
JR102
JR130
JR128
CN100
2
1
JR110
JR109
JR108
JR107
C103
JR104
JR106
C112
JR105
C111
19
20
JR126
JR125
1-654-341-
12
5

RJ-62 BOARD	
CN100	A-5
D100	A-4
D101	A-1
D102	A-2
D103	A-2
D104	A-2
D109	B-2
D110	B-1
D111	B-2
D112	B-4


1
2
3
4
5
6
7
8
A
B
C
D
E
F
RJ-62 BOARD
D103
MA3075WA
C101
100p
R100
39
D102
MA3075WA
C102
100p
R101
39
D100
RD9.1M
C104
(2012)
D101
RD5.6M
C100
100p
D104
MA3075WA
C103
100p
R102
39
R103
39
FB101
R104 39
R105
39
CNJ100
AUDIO
L
R
S VIDEO
VIDEO
SW
C
Y
GND
2
1
BUZZ EARTH
R109
0
26
R106
0
C105
1000p
C106
1000p
LINE IN
R110
0
LINE OUT
AUDIO
L
R
S VIDEO
VIDEO
C107
1000p
C108
1000p
R107
390
R108
390
D110
MA3075WA
C109
100p
D109
MA3075WA
C112
100p
D111
MA3075WA
C111
100p
D112
RD9.1M
C110
(2012)
CN100 20P
1 LINE IN 1 R
2 AUDIO GND
3 LINE IN 1 L
4 LINE IN 1 V (Y)
5 LINE IN 1 V (X)
6 LINE IN 1 Y (Y)
7 LINE IN 1 Y (X)
8 LINE IN 1 C (Y)
9 LINE IN 1 C (X)
10 S SW 1
11 GND (E)
12 LINE OUT C (X)
13 LINE OUT C (Y)
14 LINE OUT Y (X)
15 LINE OUT Y (Y)
16 LINE OUT V (X)
17 LINE OUT V (Y)
18 LINE OUT L
19 AUDIO GND
20 LINE OUT R
TO
VS-121 BOARD (5/5)
CN900
(See Page 5-32)

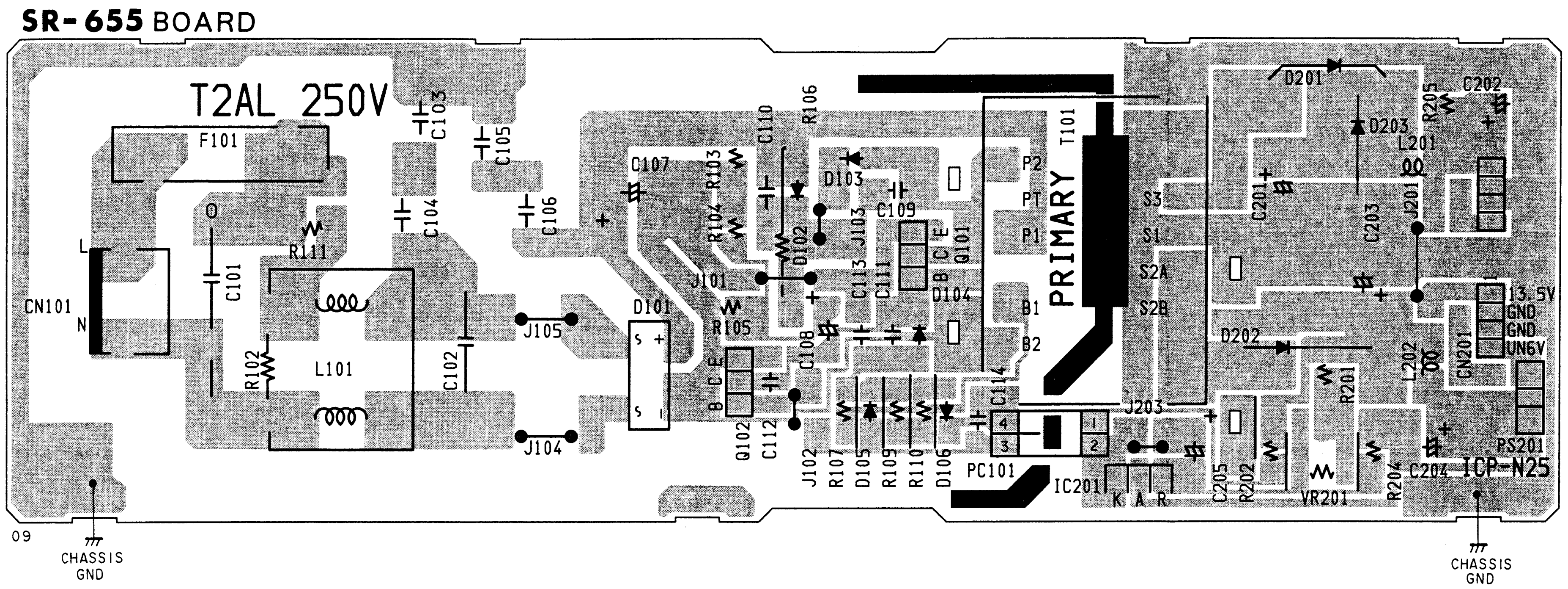
·SIGNAL PATH

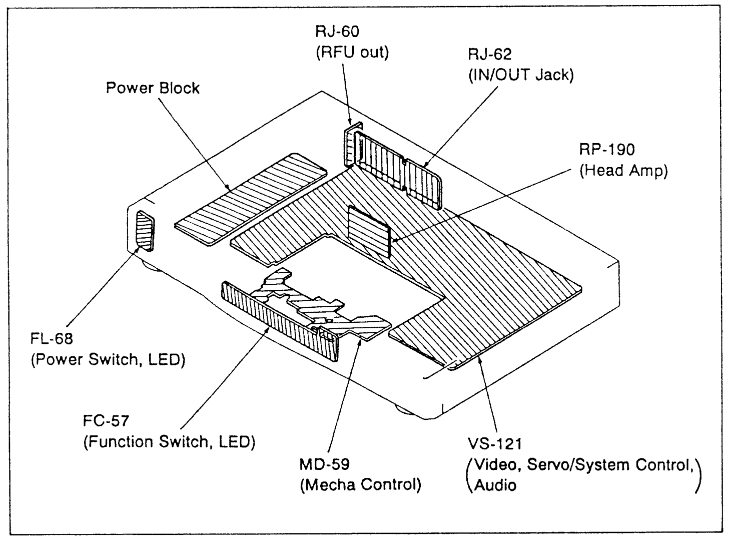
	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡>	➡>>	➡
PB	⇨	⇨>	⇨>>	⇨

09

POWER BLOCK (SR-655) (POWER) PRINTED WIRING BOARD

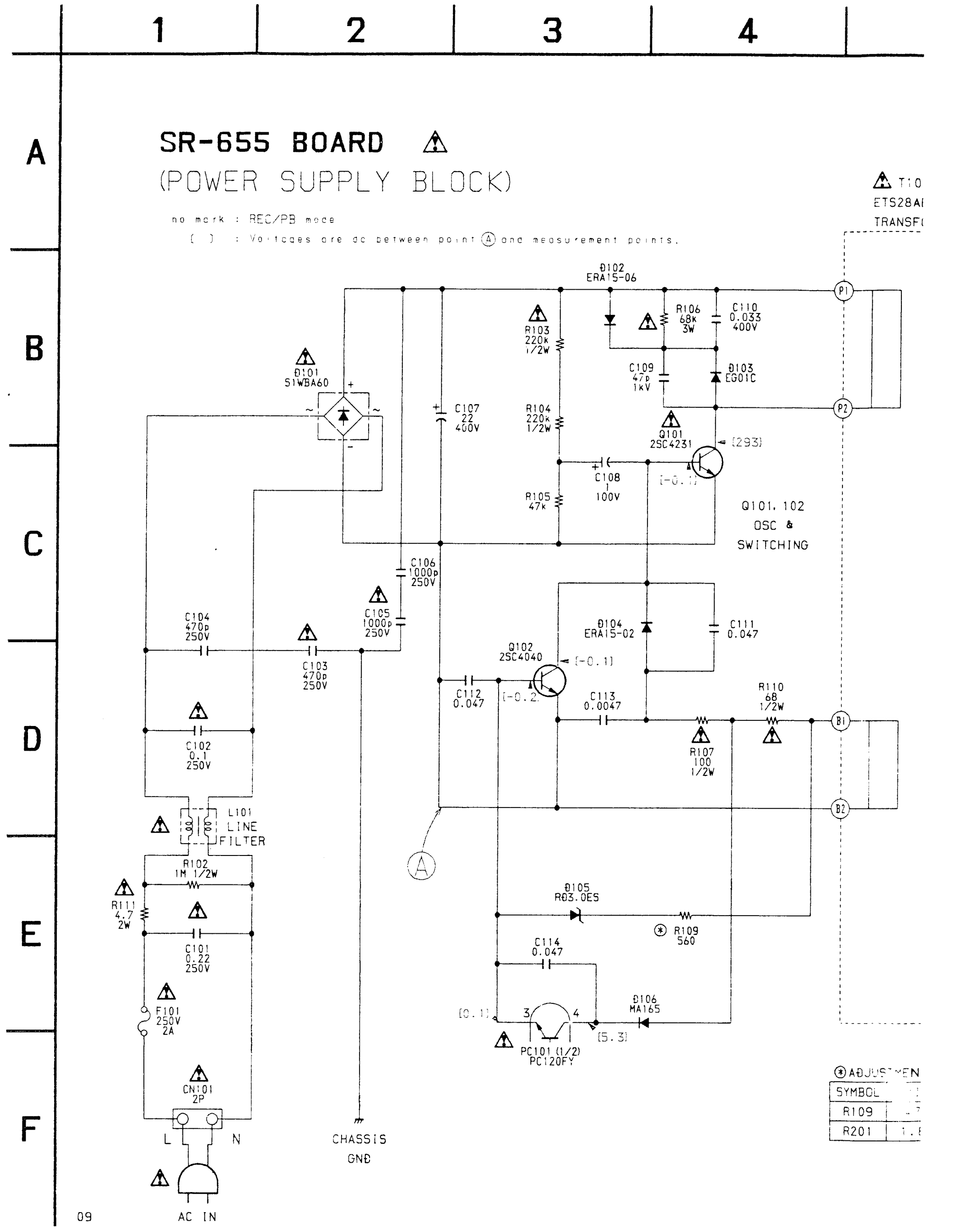
— Ref. No. POWER BLOCK (SR-655): 8000 series —


SR-655 BOARD
T2AL 250V
F101
CN101
L
N
C101
C102
C103
C104
C105
C106
C107
C108
C109
C110
C111
C112
C113
C114
R102
R103
R104
R105
R106
R107
R109
R110
R111
L101
D101
D102
D103
D104
D105
D106
J101
J102
J103
J104
J105
Q101
Q102
B C E
PC101
T101
PRIMARY
P2
PT
P1
B1
B2
S3
S1
S2A
S2B
D201
D202
D203
L201
L202
C201
C202
C203
C204
C205
R201
R202
R204
R205
J201
J203
IC201
K A R
VR201
CN201
13.5V
GND
GND
UN6V
PS201
ICP-N25
09
CHASSIS
GND
CHASSIS
GND


RJ-60
(RFU out)
RJ-62
(IN/OUT Jack)
Power Block
RP-190
(Head Amp)
FL-68
(Power Switch, LED)
FC-57
(Function Switch, LED)
MD-59
(Mecha Control)
VS-121
(Video, Servo/System Control, Audio)

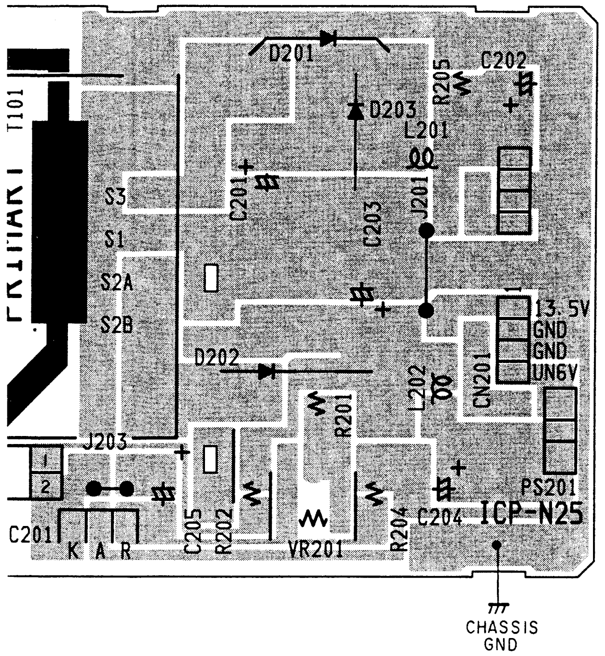
POWER BLOCK (SR-655) (POWER) SCHEMATIC DIAGRAM

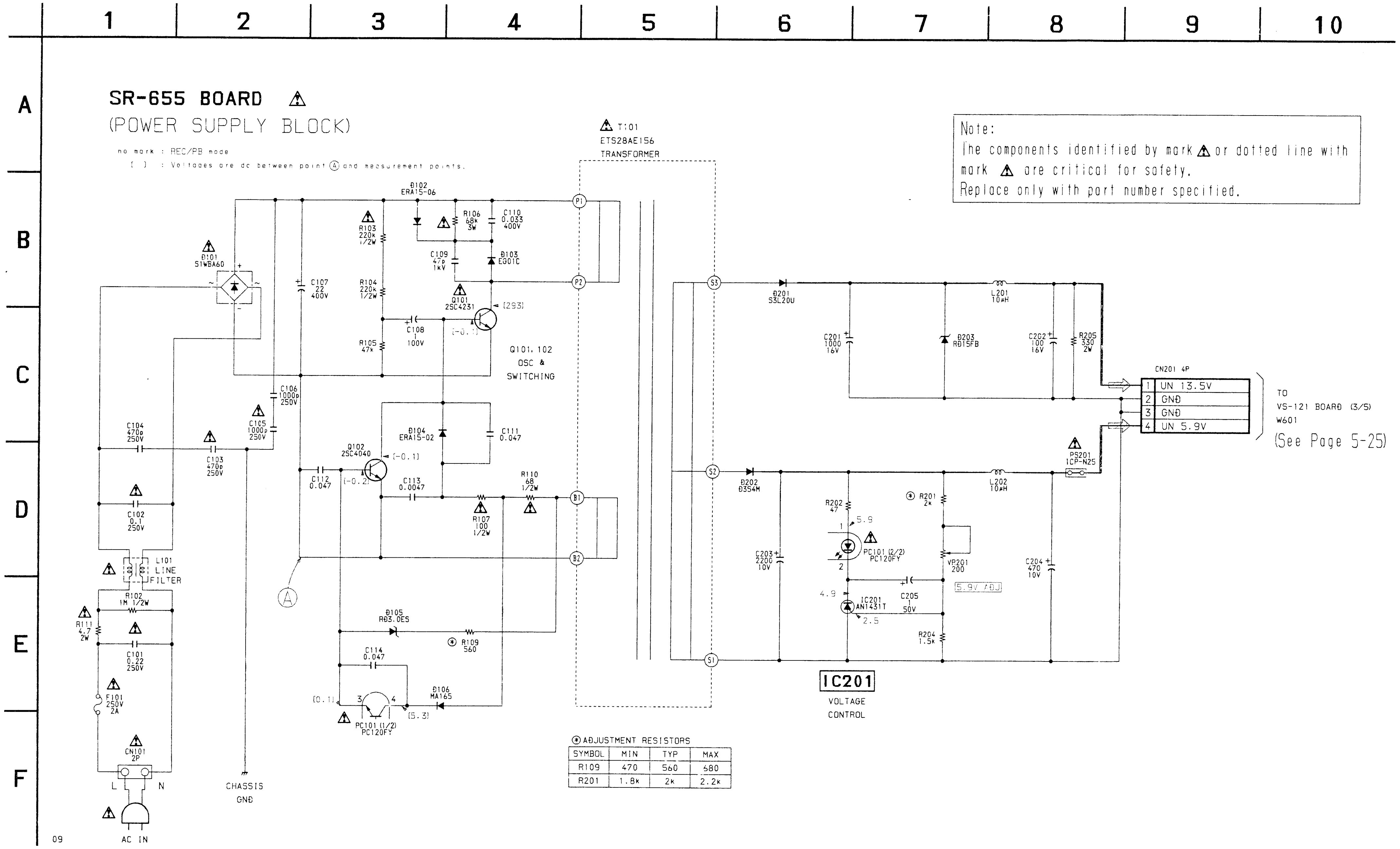
— Ref. No. POWER BLOCK (SR-655): 8000 series —


1
2
3
4
A
B
C
D
E
F
SR-655 BOARD ⚠
(POWER SUPPLY BLOCK)
no mark : REC/PB mode
[ ] : Voltages are dc between point Ⓐ and measurement points.
⚠ T10
ETS28A
TRANSF
D102
ERA15-06
R103
220k
1/2W
R106
68k
3W
C110
0.033
400V
C109
47p
1kV
D103
EG01C
D101
S1WBA60
C107
22
400V
R104
220k
1/2W
Q101
2SC4231
[293]
C108
1
100V
[-0.1]
R105
47k
Q101, 102
OSC &
SWITCHING
P1
P2
C106
1000p
250V
C105
1000p
250V
C104
470p
250V
C103
470p
250V
D104
ERA15-02
C111
0.047
Q102
2SC4040
[-0.1]
C112
0.047
[-0.2]
C113
0.0047
R110
68
1/2W
R107
100
1/2W
B1
B2
C102
0.1
250V
L101
LINE
FILTER
Ⓐ
R102
1M 1/2W
R111
4.7
2W
C101
0.22
250V
D105
R03.0ES
⊛ R109
560
C114
0.047
D106
MA165
[0.1]
[5.3]
3
4
PC101 (1/2)
PC120FY
F101
250V
2A
CN101
2P
L
N
AC IN
CHASSIS
GND
09
⊛ ADJUSTMEN
SYMBOL
R109
R201

POWER BLOCK (SR-655) (POWER) SCHEMATIC DIAGRAM

— Ref. No. POWER BLOCK (SR-655): 8000 series —


T101
PRIMARY
S3
S1
S2A
S2B
D201
D203
R205
C202
L201
C201
C203
J201
13.5V
GND
GND
UN6V
CN201
D202
R201
L202
PS201
ICP-N25
C204
R204
VR201
R202
C205
J203
1
2
C201
K A R
CHASSIS
GND


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
SR-655 BOARD ⚠
(POWER SUPPLY BLOCK)
no mark : REC/PB mode
[ ] : Voltages are dc between point Ⓐ and measurement points.
⚠ T101
ETS28AE156
TRANSFORMER
D101
S1WBA60
C107
22
400V
R103
220k
1/2W
D102
ERA15-06
R106
68k
3W
C110
0.033
400V
C109
47p
1kV
D103
EG01C
R104
220k
1/2W
Q101
2SC4231
[293]
C108
1
100V
[-0.1]
R105
47k
Q101, 102
OSC &
SWITCHING
C106
1000p
250V
C105
1000p
250V
C104
470p
250V
C103
470p
250V
C102
0.1
250V
D104
ERA15-02
C111
0.047
Q102
2SC4040
[-0.1]
C112
0.047
[-0.2]
C113
0.0047
R107
100
1/2W
R110
68
1/2W
L101
LINE
FILTER
R102
1M 1/2W
R111
4.7
2W
C101
0.22
250V
F101
250V
2A
CN101
2P
L
N
AC IN
CHASSIS
GND
09
Ⓐ
D105
R03.0ES
R109
560
C114
0.047
[0.1]
3
4
[5.3]
D106
MA165
PC101 (1/2)
PC120FY
P1
P2
B1
B2
S3
S2
S1
D201
S3L20U
C201
1000
16V
D203
RD15FB
L201
10μH
C202
100
16V
R205
330
2W
CN201 4P
1 UN 13.5V
2 GND
3 GND
4 UN 5.9V
TO
VS-121 BOARD (3/5)
W601
(See Page 5-25)
PS201
ICP-N25
D202
D3S4M
R202
47
5.9
1
2
PC101 (2/2)
PC120FY
R201
2k
VR201
200
L202
10μH
C203
2200
10V
C204
470
10V
C205
1
50V
5.9V ADJ
4.9
IC201
AN1431T
2.5
R204
1.5k
IC201
VOLTAGE
CONTROL

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

⊛ ADJUSTMENT RESISTORS

SYMBOL	MIN	TYP	MAX
R109	470	560	680
R201	1.8k	2k	2.2k

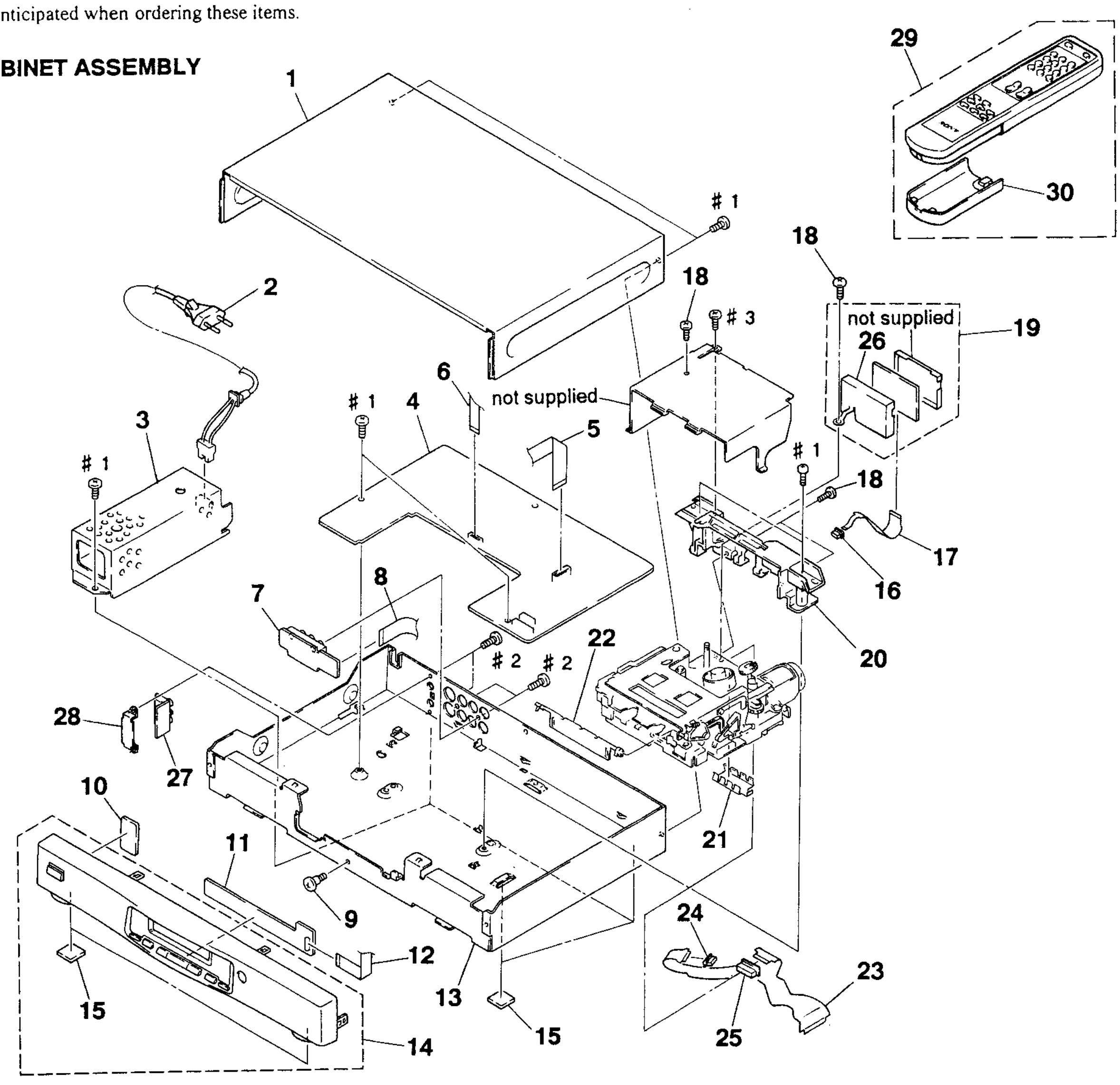
SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

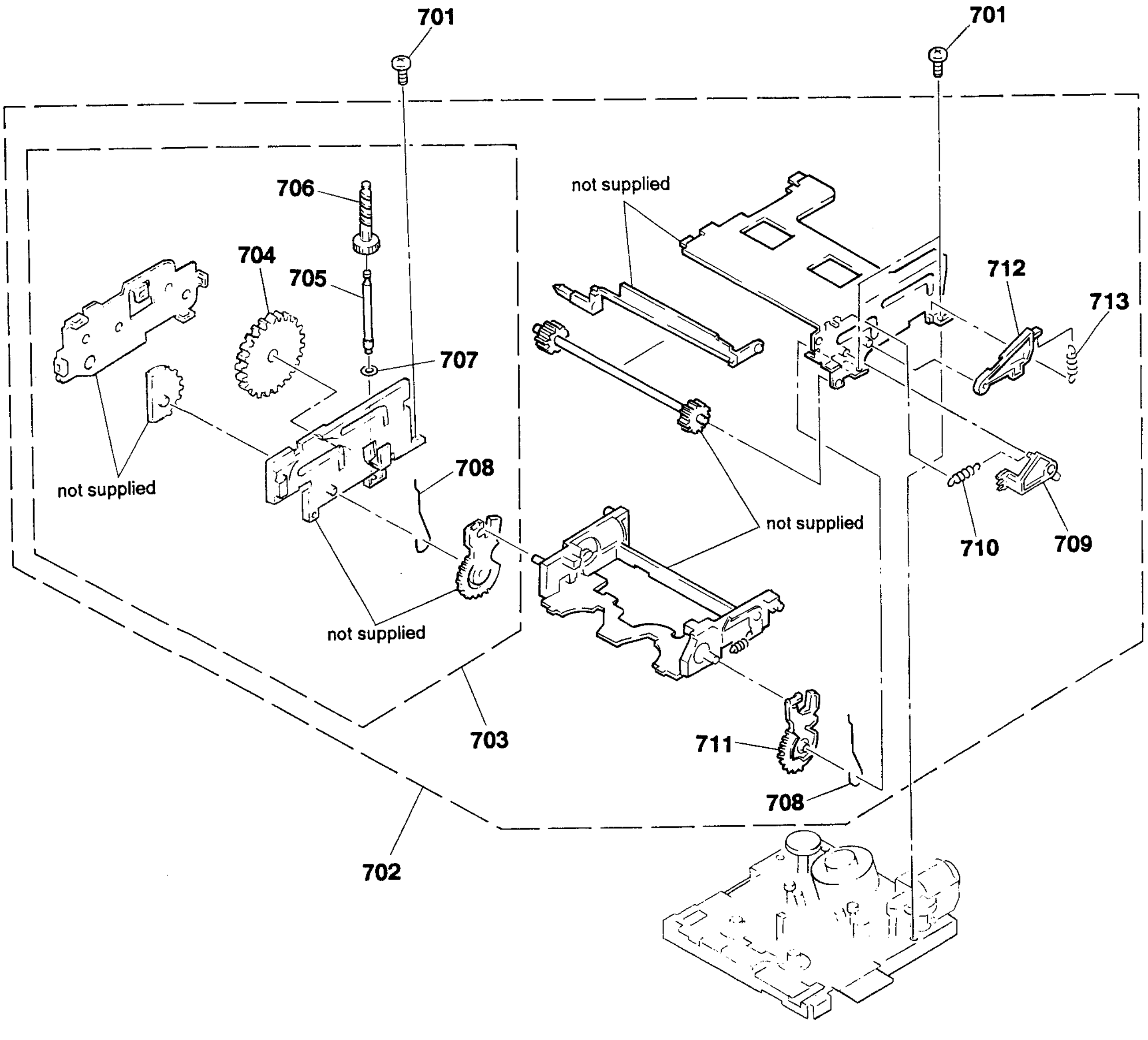
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

6-1-1. CABINET ASSEMBLY



Ref. No.	Part No.	Description	Remark
∗ 1	3-960-843-01	CASE, UPPER	
⚠2	1-769-767-11	CORD, POWER	
⚠3	1-468-021-11	POWER BLOCK	
∗ 4	A-7066-358-A	VS-121PH BOARD, COMPLETE	
5	1-769-100-11	CABLE, FLAT (FMV-2)	
6	1-769-099-11	CABLE, FLAT (FRV-2)	
∗ 7	A-7072-189-A	RJ-62PH BOARD, COMPLETE	
8	1-769-103-11	CABLE, FLAT (FRV-3)	
9	3-741-948-01	SCREW (3), SPECIAL (+) TAPPING	
∗ 10	A-7072-186-A	FL-68PH BOARD, COMPLETE	
∗ 11	A-7072-187-A	FC-57PH BOARD, COMPLETE	
12	1-769-102-11	CABLE, FLAT (FFV-5)	
13	3-960-833-21	BASE	
14	X-3944-912-1	PANEL ASSY, FRONT	
15	3-960-832-01	FELT	
16	1-691-471-11	CONNECTOR, TRANSLATION 11P	
17	1-649-565-11	FP-696 FLEXIBLE BOARD	
18	3-732-817-01	SCREW (2X4.5), TAPPING	
∗ 19	A-7066-354-A	RP-190PH BOARD, COMPLETE	
∗ 20	3-960-834-01	FRAME, RP	
∗ 21	X-3944-471-1	PLATE ASSY, GROUND, ST	
22	3-955-929-41	DOOR, CASSETTE COMPARTMENT	
23	1-649-836-11	FP-695 FLEXIBLE BOARD	
24	1-691-254-13	CONNECTOR, TRANSLATION 10P	
25	1-764-137-11	CONNECTOR, TRANSLATION 15P	
∗ 26	3-955-621-01	CASE (MAIN), SHIELD, RP	
∗ 27	A-7072-188-A	RJ-60PH BOARD, COMPLETE	
∗ 28	3-949-486-01	BRACKET, RJ	
29	1-473-181-11	REMOTE COMMANDER (RMT-V176)	
30	9-900-029-01	COVER, BATTERY (for RMT-V176)	

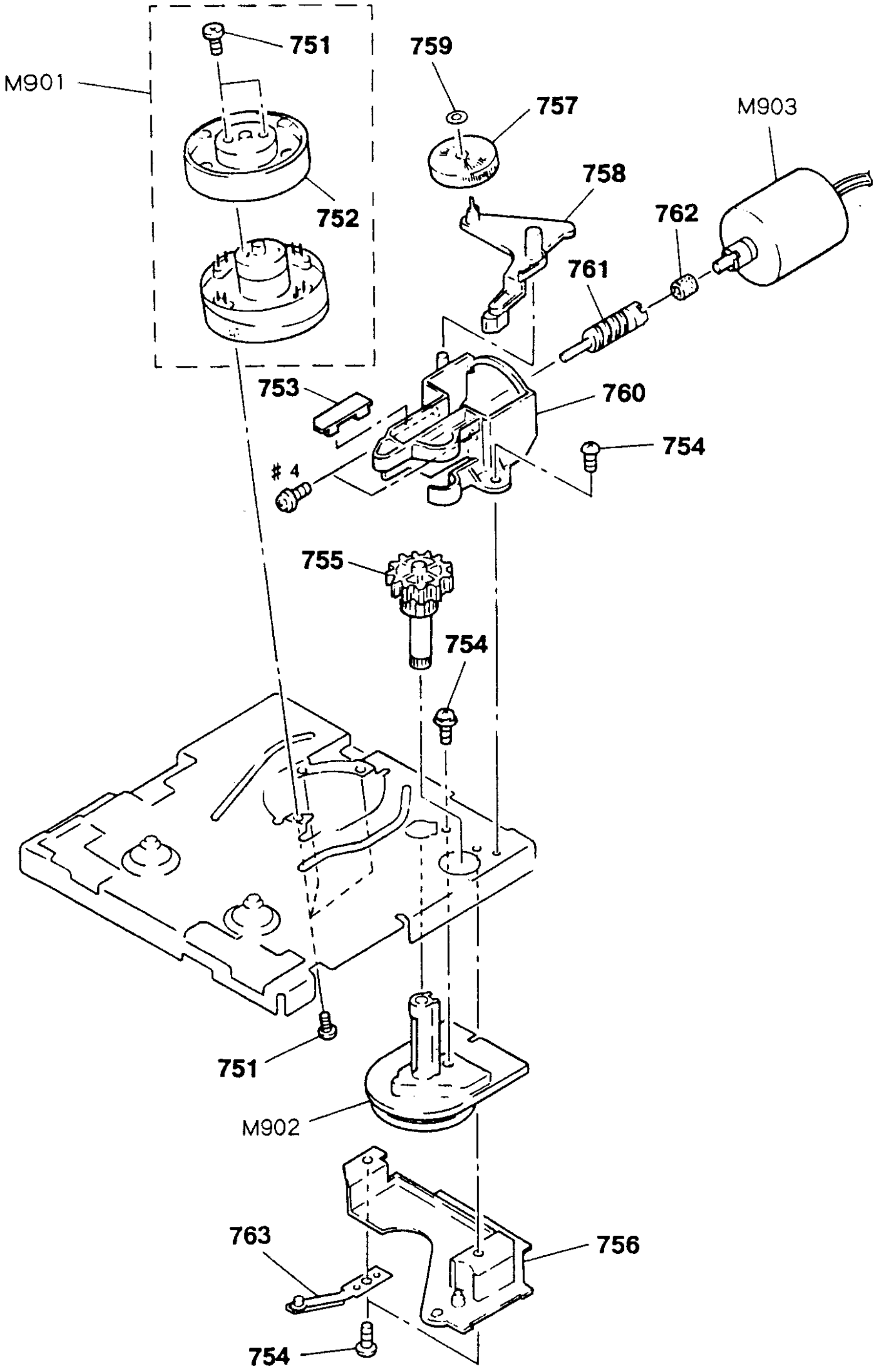
6-1-2. FL CASSETTE COMPARTMENT ASSEMBLY


701
701
706
704
705
707
not supplied
712
713
708
not supplied
not supplied
710
709
not supplied
703
711
708
702

Ref. No.	Part No.	Description	Remark
701	3-732-817-01	SCREW (2X4.5), TAPPING	
702	A-7091-941-A	FL BLOCK ASSY	
703	A-7091-942-A	PLATE (S) BLOCK ASSY, SIDE	
704	3-954-019-01	WHEEL, FL WORM	
* 705	3-954-029-01	SHAFT, FL WORM GEAR	
706	3-954-028-01	GEAR, FL WORM	
707	3-738-212-11	RETAINER, THRUST, REEL TABLE	

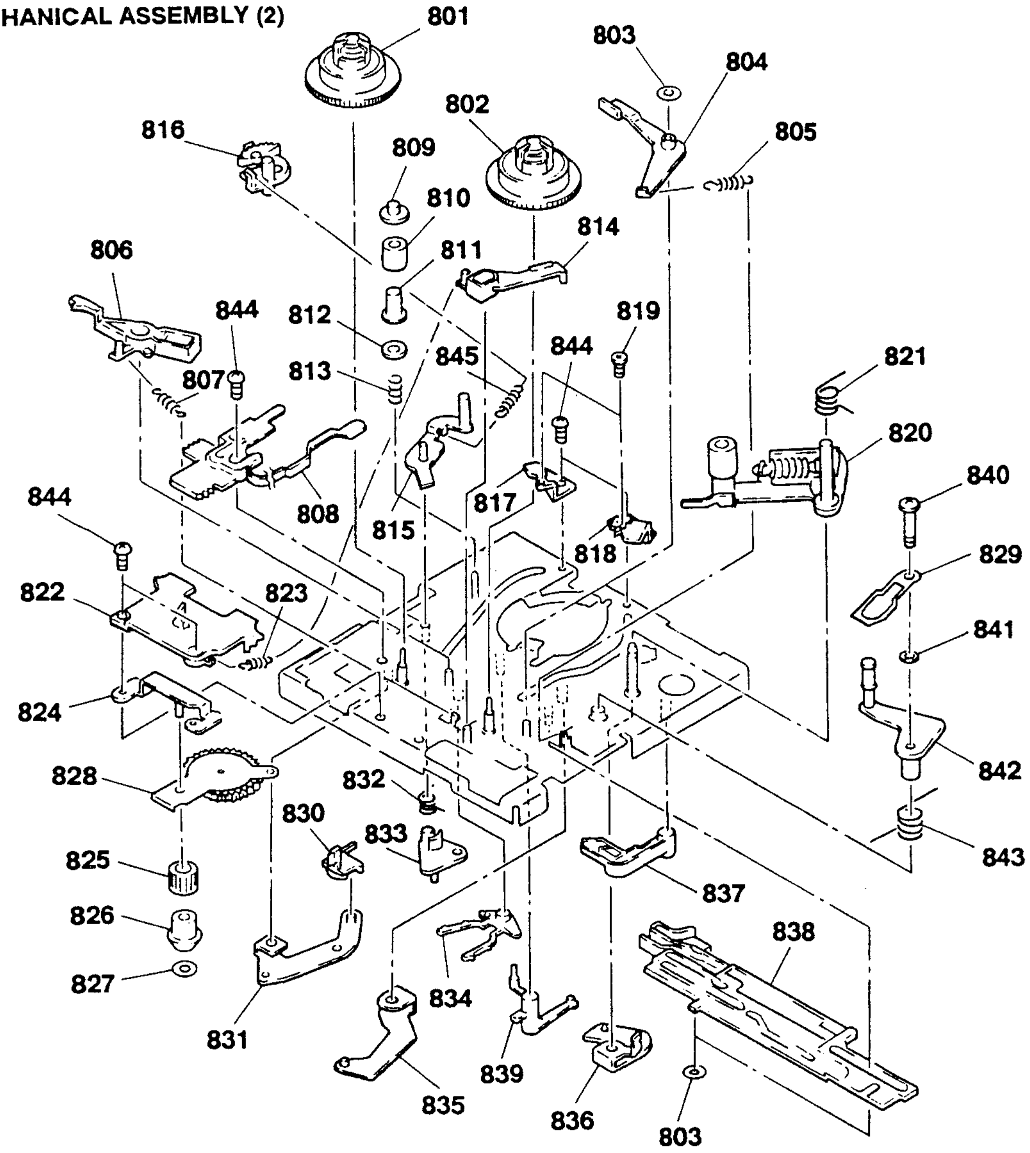
Ref. No.	Part No.	Description	Remark
708	3-954-042-01	SPRING, PRESS	
* 709	3-954-041-01	ARM, DOOR SWITCHING	
710	3-954-044-01	SPRING, TENSION	
711	3-954-033-01	ARM (T), DRIVING	
* 712	3-954-040-01	ARM, CASSETTE IN SWITCH	
713	3-954-043-01	SPRING, TENSION	

6-1-3. MECHANICAL ASSEMBLY (1)


751
M901
752
759
757
M903
758
762
761
760
753
754
# 4
755
754
751
M902
763
756
754

Ref. No.	Part No.	Description	Remark
751	3-686-493-01	SCREW (M2X5), P1	
752	A-7049-660-A	DRUM ASSY, UPPER, ROTARY (DGR-0B8-R)	
* 753	3-958-047-01	COVER, MOTOR HOLDER	
754	3-732-817-01	SCREW (2X4.5), TAPPING	
755	3-954-023-01	WHEEL, CAM WORM	
* 756	3-954-049-01	RETAINER, WORM WHEEL	
757	X-3943-192-1	ROLLER ASSY, HC	
758	X-3942-947-1	ARM ASSY, HC	
759	3-321-393-01	WASHER, STOPPER	
760	3-954-024-03	HOLDER, MOTOR	
761	3-733-395-01	GEAR (CAM), WORM	
762	3-962-295-01	RUBBER, JOINT	
763	X-3942-960-1	GROUND ASSY, SHAFT	
M901	A-7048-787-A	DRUM ASSY (DGU-0B8A-R)	
M902	8-835-499-01	MOTOR, DC SCE-0501A (CAPSTAN)	
M903	X-3942-946-1	MOTOR ASSY, CAM (LOADING)	

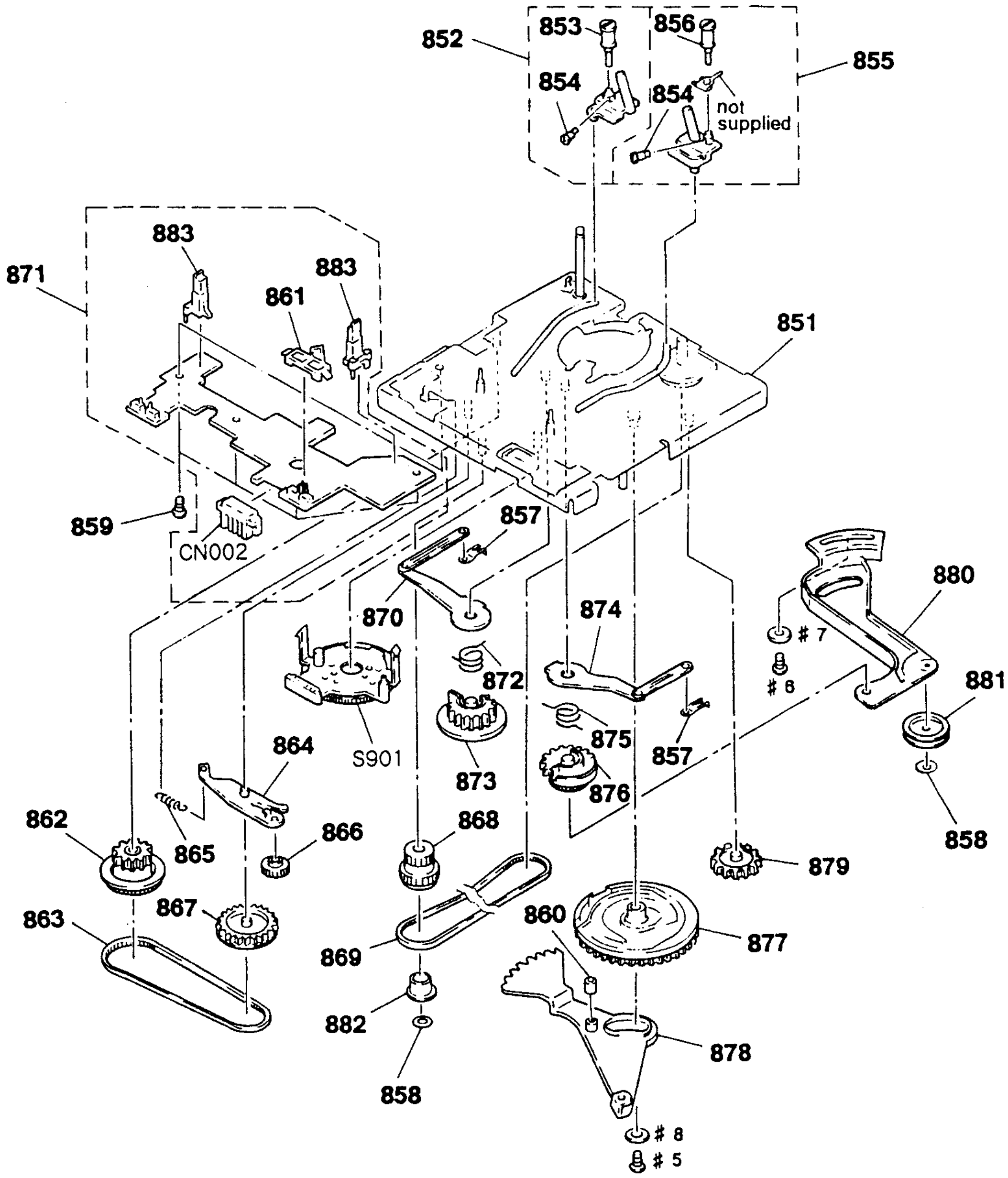
6-1-4. MECHANICAL ASSEMBLY (2)



801
803
804
802
816
809
805
810
814
806
811
844
812
819
821
807
813
845
844
820
840
844
808
815
817
818
829
822
823
841
824
842
828
832
830
833
843
825
837
838
826
827
834
831
839
835
836
803

Ref. No.	Part No.	Description	Remark
801	X-3942-954-1	TABLE (S) ASSY, REEL	
802	X-3942-953-2	TABLE (T) ASSY, REEL	
803	3-669-465-01	WASHER (1.5), STOPPER	
804	X-3943-161-3	BRAKE (T) ASSY	
805	3-953-978-01	SPRING, TENSION	
806	3-954-071-01	ARM, BRAKE (S)	
807	3-954-085-01	SPRING, TENSION	
808	X-3942-956-1	BAND ASSY, TENSION REGULATOR	
809	3-726-884-01	FLANGE, UPPER, TG2	
810	3-943-670-02	ROLLER, TG2	
811	3-726-885-01	SLEEVE, TG2	
812	3-726-882-02	FLANGE, LOWER, TG2	
813	3-954-001-01	SPRING, COMPRESSION	
814	X-3943-111-1	BRAKE (T) ASSY, SOFT	
815	X-3942-955-1	TENSION REGULATOR ASSY	
816	3-954-103-01	ARM, TENSION ADJUSTMENT	
817	3-954-090-01	CATCHER (S)	
818	3-954-091-01	CATCHER (T)	
819	3-954-285-01	SCREW (M1.4X0.2)	
820	X-3942-945-1	ARM ASSY, PINCH	
821	3-954-105-01	SPRING (PINCH DRIVING)	
* 822	3-954-063-01	PLATE, RELEASE, REEL LOCK	
823	3-955-142-01	SPRING, TENSION	
824	X-3943-162-1	BASE ASSY, PENDULUM	
825	3-954-059-01	GEAR, PENDULUM DRIVING	
826	3-954-321-01	BEARING, PENDULUM DRIVING	
827	3-726-829-01	WASHER, STOPPER	
828	X-3942-951-1	GEAR ASSY, PENDULUM	
829	3-954-093-01	SPACER, TG7	
830	3-953-975-01	CLAW, S TAKE-UP	
* 831	3-953-974-01	ARM, S TAKE-UP	
832	3-956-366-01	SPRING, TORSION	
833	3-954-100-01	ARM, TENSION REGULATOR SUB	
834	3-953-973-01	ARM, PENDULUM COMPULSION	
* 835	3-954-007-01	LEVER, SLIDE PLATE DRIVING	
* 836	3-954-009-01	LEVER, PINCH DRIVING	
837	3-954-016-01	LEVER, TG7 DRIVING	
838	3-953-972-01	PLATE, SLIDE	
839	3-954-072-01	LEVER, BRAKE (S) DRIVING	
840	3-954-096-01	SCREW, TG7 HEIGHT ADJUSTMENT	
841	3-738-212-11	RETAINER, THRUST, REEL TABLE	
842	X-3942-958-1	ARM ASSY, TG7	
843	3-954-003-01	SPRING (TG7), TORSION	
844	3-732-817-01	SCREW (2X4.5), TAPPING	
845	3-954-074-01	SPRING, TENSION	

6-1-5. MECHANICAL ASSEMBLY (3)


852
853
856
855
854
854
not supplied
871
883
883
861
851
859
CN002
857
880
870
874
# 7
# 6
881
872
875
857
864
S901
873
876
862
868
866
865
858
879
863
867
860
877
869
882
878
858
# 8
# 5

Ref. No.	Part No.	Description	Remark
* 851	X-3942-952-1	CHASSIS ASSY, MECHANICAL	
852	A-7040-338-A	COASTER (S) BLOCK ASSY	
853	X-3941-755-1	ROLLER ASSY (2), TG3	
854	3-947-504-01	SCREW (M1.2X2)	
855	A-7040-339-A	COASTER (T) BLOCK ASSY	
856	X-3941-756-1	ROLLER ASSY (2), TG6	
857	3-956-649-01	SPRING, LEAF, COASTER	
858	3-726-829-01	WASHER, STOPPER	
859	3-732-817-01	SCREW (2X4.5), TAPPING	
860	3-954-323-01	ROLLER, LOADING	
861	3-954-639-01	HOLDER (T), PUSH SWITCH	
862	3-953-983-01	GEAR, FL PULLEY	
863	3-954-079-01	BELT (FL), TIMING	
864	3-953-979-01	ARM, FL SELECTION	
865	3-953-982-01	SPRING, TENSION	
866	3-953-980-01	GEAR, FL SELECTION	
867	3-953-981-01	GEAR (DRIVING), FL PULLEY	
868	3-954-061-01	GEAR, REEL RELAY	
869	3-953-986-01	BELT, TIMING	
870	X-3942-949-1	ARM (S) ASSY, LOADING	
* 871	A-7056-213-A	MD-59A BOARD, COMPLETE	
872	3-953-998-01	SPRING (S), TORSION	
873	3-953-991-01	GEAR (S), LOADING	
874	X-3942-948-1	ARM (T) ASSY, LOADING	
875	3-954-000-01	SPRING (T), TORSION	
876	3-953-992-01	GEAR (T), LOADING	
877	3-954-050-01	CAM, MAIN	
* 878	3-954-014-01	LEVER, LOADING DRIVING	
879	3-954-015-01	GEAR, CAM RELAY	
880	X-3942-962-1	BASE ASSY, PULLEY	
881	X-3943-016-1	PULLEY ASSY, BELT	
882	3-954-102-02	FLANGE, REEL RELAY	
883	3-953-985-01	HOLDER, ST SENSOR	
CN002	1-750-620-11	CONNECTOR (MM8 MD)	
S901	1-692-498-11	SWITCH, ROTARY	

6-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description	Remark
*	A-7072-187-A	FC-57PH BOARD, COMPLETE	
		************************	
		(Ref. No. 5, 000 Series)	
		< CAPACITOR >	
C080	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
* CN080	1-691-074-11	HOUSING, CONNECTOR 15P	
		< DIODE >	
D080	8-719-987-41	LED CL-150Y-CD (🖭)	
D081	8-719-026-39	DIODE CL-150UR-CD (REC ●)	
D082	8-719-987-41	LED CL-150Y-CD (PAUSE ▮▮)	
D083	8-719-987-41	LED CL-150Y-CD (REW ◀◀)	
D084	8-719-989-XX	DIODE CL-150YG-CD (PLAY ▷)	
D085	8-719-987-41	LED CL-150Y-CD (FF ▶▶)	
D086	8-719-989-XX	DIODE CL-150YG-CD (Hi8)	
D087	8-719-989-XX	DIODE CL-150YG-CD (Hi8)	
D088	8-719-800-76	DIODE 1SS226	
D089	8-719-800-76	DIODE 1SS226	
D090	8-719-800-76	DIODE 1SS226	
		< IC >	
IC080	8-749-923-29	IC RS-20E-T	
		< TRANSISTOR >	
Q080	8-729-421-19	TRANSISTOR UN2213	
Q081	8-729-421-19	TRANSISTOR UN2213	
Q082	8-729-421-19	TRANSISTOR UN2213	
Q083	8-729-421-19	TRANSISTOR UN2213	
		< RESISTOR >	
R080	1-216-027-00	METAL CHIP 120 5% 1/10W	
R081	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R082	1-216-027-00	METAL CHIP 120 5% 1/10W	
R083	1-216-027-00	METAL CHIP 120 5% 1/10W	
R084	1-216-033-00	METAL CHIP 220 5% 1/10W	
R085	1-216-027-00	METAL CHIP 120 5% 1/10W	
R086	1-216-015-00	METAL CHIP 39 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R890	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R891	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R892	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R893	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R894	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R895	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R896	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
		< SWITCH >	
S080	1-554-303-21	SWITCH, TACTILE (HI SPEED REW ◀◀◀)	
S081	1-554-303-21	SWITCH, TACTILE (STOP ■)	
S082	1-554-303-21	SWITCH, TACTILE (REW ◀◀)	
S083	1-554-303-21	SWITCH, TACTILE (PLAY ▷)	
S084	1-554-303-21	SWITCH, TACTILE (FF ▶▶)	
S085	1-554-303-21	SWITCH, TACTILE (PAUSE ▮▮)	
S086	1-554-303-21	SWITCH, TACTILE (REC ●)	
S087	1-554-303-21	SWITCH, TACTILE (EJECT ⏏)	
**			
*	A-7072-186-A	FL-68PH BOARD, COMPLETE	
		************************	
		(Ref. No. 6, 000 Series)	
		< DIODE >	
D095	8-719-987-43	DIODE CL-150PG-CD (POWER)	
D096	8-719-987-43	DIODE CL-150PG-CD (POWER)	
D097	8-719-024-87	DIODE LN1261CAL (STANDBY)	
		< TRANSISTOR >	
Q095	8-729-901-06	TRANSISTOR DTA144EK	
		< RESISTOR >	
R095	1-216-017-00	METAL CHIP 47 5% 1/10W	
R096	1-216-035-00	METAL CHIP 270 5% 1/10W	
		< SWITCH >	
S095	1-554-303-21	SWITCH, TACTILE (ON/STANDBY)	
**			

MD-59A

POWER BLOCK

Ref.No.	Part No.	Description	Remark
*	A-7056-213-A	MD-59A BOARD, COMPLETE	
		**********************	
		(Ref.No. 3,000 Series)	
*	1-648-300-11	MD-59 BOARD	
	3-953-985-01	HOLDER, ST SENSOR	
	3-954-639-01	HOLDER (T), PUSH SWITCH	
		< CONNECTOR >	
CN001	1-691-051-21	HOUSING, CONNECTOR 19P	
CN002	1-750-620-11	CONNECTOR (MM8 MD)	
		< DIODE >	
D001	8-719-988-42	DIODE GL453S (TOP/END)	
D002	8-719-106-79	DIODE RD13M-B1	
D003	8-719-106-73	DIODE RD7.5M-B2	
D004	8-719-106-73	DIODE RD7.5M-B2	
D005	8-719-106-73	DIODE RD7.5M-B2	
		< HALL ELEMENT >	
H001	1-808-118-11	ELEMENT, HALL HW-300A (S REEF FG)	
H002	1-808-118-11	ELEMENT, HALL HW-300A (T REEF FG)	
		< JUMPER RESISTOR >	
JR001	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR002	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR003	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< TRANSISTOR >	
PT001	8-729-907-25	TRANSISTOR PT4850F (END SENS)	
PT002	8-729-907-25	TRANSISTOR PT4850F (TOP SENS)	
		< RESISTOR >	
R001	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R002	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R003	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R004	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R005	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< SWITCH >	
S003	1-692-497-11	SWICH, PUSH (ME/MP)	
S004	1-692-497-11	SWICH, PUSH (Hi8 MP)	
S005	1-692-497-11	SWICH, PUSH (REC PROOF)	
S006	1-570-953-11	SWITCH, PUSH (1 KEY)(CC DOWN)	

****

Ref.No.	Part No.	Description	Remark
⚠*	1-468-021-11	POWER BLOCK (SR-655)	
		********************	
		(Ref.No. 8,000 Series)	
	9-902-059-01	CLIP, FUSE	
		< CAPACITOR >	
⚠C101	1-130-711-00	METALIZED 0.22uF	50V
⚠C102	1-136-189-00	METALIZED 0.1uF	250V
⚠C103	9-905-279-01	CERAMIC 470PF	250V
C104	9-905-279-01	CERAMIC 470PF	250V
⚠C105	9-904-183-01	CERAMIC 1000PF	250V
C106	9-904-183-01	CERAMIC 1000PF	250V
C107	9-907-232-01	ELECT 22uF	400V
C108	9-904-185-01	ELECT 1uF	100V
C109	9-902-101-01	CERAMIC 47PF	1KV
C110	1-129-720-00	METALIZED 0.033uF	400V
C111	1-130-491-00	FILM 0.047uF	50V
C112	1-130-491-00	FILM 0.047uF	50V
C113	1-130-479-00	FILM 0.0047uF	50V
C114	1-130-491-00	FILM 0.047uF	50V
C201	1-129-720-00	ELECT 1000uF	16V
C202	1-126-933-11	ELECT 100uF	16V
C203	1-126-927-11	ELECT 2200uF	10V
C204	1-126-925-11	ELECT 470uF	10V
C205	1-124-903-11	ELECT 1uF	50V
		< CONNECTOR >	
⚠CN101	9-907-239-01	CONNECTOR 2P (B2P3-VH)	
CN201	1-564-014-11	CONNECTOR 4P	
		< DIODE >	
⚠D101	8-719-510-06	DIODE SIWB60 (600V, 1A)	
D102	8-719-304-63	DIODE RM119 (600V, 1A)	
D103	8-719-030-25	DIODE EG01C (100V, 0.5A)	
D104	8-719-200-02	DIODE 10E-2 (200V, 1A)	
D105	8-719-109-63	DIODE RD3.0ESB2 (3V, 400mA)	
D106	8-719-911-19	DIODE 1SS119-25 (35V, 100mA)	
D201	9-904-701-01	DIODE S3L20U (200V, 3A)	
D202	8-719-981-00	DIODE ERC81-004 (40V, 3A)	
D203	8-719-160-63	DIODE RD15FB3 (15V, 1000mW)	
		< FUSE >	
⚠F101	1-532-203-00	FUSE (250V, 2A)	
		< IC >	
IC201	8-759-420-19	IC AN1431T	
		< COIL >	
⚠L101	9-905-326-01	FILTER, LINE (ELF18D290H)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

POWER BLOCK | RJ-60PH | RJ-62PH

Ref. No.	Part No.	Description	Remark
L201	9-900-520-01	INDUCTOR 10uH	
L202	9-900-520-01	INDUCTOR 10uH	
		< PHOTO COUPLER >	
⚠PC101	8-719-037-65	ON3171	
		< IC LINK >	
⚠PS201	1-532-637-21	LINK, IC (ICP-N25)	
		< TRANSISTOR >	
⚠Q101	9-902-497-11	TRANSISTOR 2SC4231 (800V, 2A)	
Q102	8-729-012-30	TRANSISTOR 2SC4040 (32V, 1A)	
		< RESISTOR >	
R102	9-902-945-01	CARBON, NONFLAMMABLE 1M 1/2W	
⚠R103	1-260-127-11	CARBON 220K 1/2W	
R104	1-260-127-11	CARBON 220K 1/2W	
R105	1-249-437-11	CARBON 47K 1/4W	
⚠R106	9-933-767-01	METAL OXIDE 68K 3W	
⚠R107	1-247-739-11	CARBON 100 1/2W	
R109	1-249-413-11	CARBON(ADJUSTMENT) 470 1/4W	
R109	1-249-414-11	CARBON(ADJUSTMENT) 560 1/4W	
R109	1-249-415-11	CARBON(ADJUSTMENT) 680 1/4W	
⚠R110	1-247-737-11	CARBON 68 1/2W	
⚠R111	9-904-186-01	CEMENT 4.7 2W	
R201	1-249-420-11	METAL(ADJUSTMENT) 1.8K 1/4W	
R201	9-933-771-01	METAL(ADJUSTMENT) 2K 1/4W	
R201	1-249-421-11	METAL(ADJUSTMENT) 2.2K 1/4W	
R202	1-247-735-11	CARBON 47 1/4W	
R204	1-249-419-11	METAL 1.5K 1/4W	
R205	9-933-772-01	METAL OXIDE 330 2W	
		< TRANSFORMER >	
⚠T101	9-933-765-01	TRANSFORMER, SWITCHING (ETS28AE156)	
		< VARIABLE RESISTOR >	
VR201	9-909-295-01	RES, ADJ 200	

****

* A-7072-188-A RJ-60PH BOARD, COMPLETE
****
(Ref. No. 4,000 Series)

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C090	1-126-157-11	ELECT 10uF 20% 16V	
C091	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C093	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN091	1-564-005-11	PIN, CONNECTOR 6P	
		< DIODE >	
D091	8-719-421-59	DIODE MA3075WA-TX	
D092	8-719-421-59	DIODE MA3075WA-TX	
D999	8-719-025-48	DIODE 02CZ13-TE85L	
		< JACK >	
J090	1-537-179-11	TERMINAL BOARD (AUDIO/RFU DC OUT/VIDEO)	
		< TRANSISTOR >	
Q090	8-729-101-07	TRANSISTOR 2SB798-DL	
Q091	8-729-422-27	TRANSISTOR 2SD601A-Q	
		< RESISTOR >	
R079	1-216-295-91	CONDCTOR, CHIP (2012)	
R088	1-216-295-91	CONDCTOR, CHIP (2012)	
R090	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R091	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R092	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R093	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R100	1-216-295-91	CONDCTOR, CHIP (2012)	

****

* A-7072-189-A RJ-62PH BOARD, COMPLETE
****
(Ref. No. 7,000 Series)

Ref. No.	Part No.	Description	Remark
	3-963-510-01	PLATE, GROUND, JACK	
		< CAPACITOR >	
C100	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C101	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C102	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C103	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C104	1-216-295-91	CONDCTOR, CHIP (2012)	
C105	1-163-275-11	CERAMIC CHIP 0.001uF 5% 50V	
C106	1-163-275-11	CERAMIC CHIP 0.001uF 5% 50V	
C107	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C108	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C109	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C110	1-216-295-91	CONDCTOR, CHIP (2012)	
C111	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C112	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
		< CONNECTOR >	
* CN100	1-695-343-41	PIN, CONNECTOR (PC BOARD) 20P	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
CNJ100	1-750-664-11	TERMINAL BLOCK, S (S VIDEO, VIDEO, AUDIO IN/OUT)	

< DIODE >

Ref. No.	Part No.	Description	Remark
D100	8-719-106-43	DIODE RD9.1M-B1	
D101	8-719-157-30	DIODE RD5.6M-B	
D102	8-719-421-59	DIODE MA3075WA-TX	
D103	8-719-421-59	DIODE MA3075WA-TX	
D104	8-719-421-59	DIODE MA3075WA-TX	
D109	8-719-421-59	DIODE MA3075WA-TX	
D110	8-719-421-59	DIODE MA3075WA-TX	
D111	8-719-421-59	DIODE MA3075WA-TX	
D112	8-719-106-43	DIODE RD9.1M-B1	

< FERRITE BEAD >

Ref. No.	Part No.	Description	Remark
FB101	1-412-390-21	INDUCTOR CHIP 0uH	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR101	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR102	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR103	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR104	1-216-295-91	CONDCTOR, CHIP (2012)	
JR105	1-216-295-91	CONDCTOR, CHIP (2012)	
JR106	1-216-295-91	CONDCTOR, CHIP (2012)	
JR107	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR108	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR109	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR110	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR111	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR112	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR113	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR114	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR115	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR116	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR117	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR118	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR119	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR120	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR121	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR122	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR123	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR124	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR125	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR126	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR127	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR128	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR129	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR130	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR131	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR132	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR133	1-216-296-00	METAL CHIP 0 5% 1/8W	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R100	1-216-015-00	METAL CHIP 39 5% 1/10W	
R101	1-216-015-00	METAL CHIP 39 5% 1/10W	
R102	1-216-015-00	METAL CHIP 39 5% 1/10W	
R103	1-216-015-00	METAL CHIP 39 5% 1/10W	
R104	1-216-015-00	METAL CHIP 39 5% 1/10W	
R105	1-216-015-00	METAL CHIP 39 5% 1/10W	
R106	1-216-295-91	CONDCTOR, CHIP (2012)	
R107	1-216-039-00	METAL CHIP 390 5% 1/10W	
R108	1-216-039-00	METAL CHIP 390 5% 1/10W	
R109	1-216-295-91	CONDCTOR, CHIP (2012)	
R110	1-216-295-91	CONDCTOR, CHIP (2012)	

****

* A-7066-354-A RP-190PH BOARD, COMPLETE

****

(Ref.No. 1,000 Series)

* 3-955-621-01 CASE (MAIN), SHIELD, RP

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C801	1-163-222-11	CERAMIC CHIP 5PF 0.25PF 50V	
C802	1-163-038-91	CERAMIC CHIP 0.1uF 25V	
C803	1-164-634-11	CERAMIC CHIP 1uF 16V	
C804	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C805	1-124-638-11	ELECT 22uF 20% 10V	
C806	1-126-157-11	ELECT 10uF 20% 16V	
C807	1-163-224-11	CERAMIC CHIP 7PF 0.25PF 50V	
C808	1-163-091-00	CERAMIC CHIP 8PF 50V	
C809	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C810	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C811	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C812	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	
C813	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C814	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C815	1-126-157-11	ELECT 10uF 20% 16V	
C816	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C817	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C818	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C819	1-164-634-11	CERAMIC CHIP 1uF 16V	
C820	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
C821	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C822	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C823	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C824	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C825	1-126-157-11	ELECT 10uF 20% 16V	
C826	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
C827	1-164-232-11	CERAMIC CHIP 0.01uF 50V	

RP-190PH

Ref. No.	Part No.	Description			Remark
C828	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C829	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C830	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C831	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C832	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C833	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C834	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C835	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C836	1-126-154-11	ELECT	47uF	20%	6.3V
C837	1-126-157-11	ELECT	10uF	20%	16V
C839	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C840	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C841	1-164-634-11	CERAMIC CHIP	1uF		16V
C842	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C844	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C845	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C846	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C847	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C849	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C850	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C851	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C852	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C853	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C854	1-127-558-11	ELECT(SOLID)	10uF	20%	10V

< CONNECTOR >

CN801	1-566-545-41	CONNECTOR, FPC (NON ZIF) 13P
CN802	1-506-487-11	PIN, CONNECTOR 8P
CN803	1-691-043-21	HOUSING, CONNECTOR 11P

< DIODE >

D801	8-719-404-46	DIODE	MA110
D802	8-719-404-46	DIODE	MA110

< IC >

IC801	8-752-003-44	IC	CX20034

< COIL >

L801	1-408-973-21	INDUCTOR 18uH
L802	1-408-982-21	INDUCTOR 100uH
L803	1-408-948-00	INDUCTOR 220uH
L804	1-408-974-21	INDUCTOR 22uH
L805	1-408-973-21	INDUCTOR 18uH
L808	1-408-970-21	INDUCTOR 10uH

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q801	8-729-421-19	TRANSISTOR	UN2213	
Q804	8-729-102-07	TRANSISTOR	2SC2223-F13	
Q805	8-729-102-07	TRANSISTOR	2SC2223-F13	
Q806	8-729-422-27	TRANSISTOR	2SD601A-Q	
Q807	8-729-216-22	TRANSISTOR	2SA1162-G	
Q808	8-729-216-22	TRANSISTOR	2SA1162-G	
Q809	8-729-216-22	TRANSISTOR	2SA1162-G	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R801	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R802	1-216-295-91	CONDCTOR, CHIP (2012)				
R806	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R807	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R808	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R809	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R810	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R811	1-216-031-00	METAL CHIP	180	5%	1/10W	
R812	1-216-001-00	METAL CHIP	10	5%	1/10W	
R813	1-216-082-00	METAL GLAZE	24K	5%	1/10W	
R814	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R815	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R816	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R817	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R818	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R819	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R821	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R822	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R823	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R824	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R825	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R826	1-216-031-00	METAL CHIP	180	5%	1/10W	
R827	1-216-001-00	METAL CHIP	10	5%	1/10W	
R828	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R829	1-216-039-00	METAL CHIP	390	5%	1/10W	
R830	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R831	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R832	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R833	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R834	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R835	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R836	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R837	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R838	1-208-814-11	METAL GLAZE	22K	0.50%	1/10W	
R839	1-208-814-11	METAL GLAZE	22K	0.50%	1/10W	
R842	1-216-295-91	CONDCTOR, CHIP (2012)				
R843	1-216-017-00	METAL CHIP	47	5%	1/10W	
R844	1-216-043-91	METAL GLAZE	560	5%	1/10W	
R845	1-216-021-00	METAL CHIP	68	5%	1/10W	
R846	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R847	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R848	1-216-035-00	METAL CHIP	270	5%	1/10W	
R849	1-216-033-00	METAL CHIP	220	5%	1/10W	
R850	1-216-081-00	METAL CHIP	22K	5%	1/10W	

Ref. No.	Part No.	Description			Remark
R851	1-216-085-00	METAL CHIP	33K	5%	1/10W
R852	1-216-021-00	METAL CHIP	68	5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description			Remark
RV801	1-230-720-11	RES, ADJ, CARBON 4.7K			
RV802	1-230-720-11	RES, ADJ, CARBON 4.7K			

****

* A-7066-358-A VS-121PH BOARD, COMPLETE

****

(Ref.No. 2,000 Series)

* 3-947-505-01 CASE, SHIELD, PWM

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C017	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C019	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C021	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C022	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C023	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C024	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C025	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C026	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C034	1-216-295-91	CONDCTOR, CHIP (2012)			
C101	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C104	1-126-157-11	ELECT	10uF	20%	16V
C105	1-126-157-11	ELECT	10uF	20%	16V
C106	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C107	1-124-638-11	ELECT	22uF	20%	10V
C108	1-126-157-11	ELECT	10uF	20%	16V
C109	1-126-157-11	ELECT	10uF	20%	16V
C110	1-126-162-11	ELECT	3.3uF	20%	50V
C111	1-126-157-11	ELECT	10uF	20%	16V
C112	1-126-301-11	ELECT	1uF	20%	50V
C113	1-126-157-11	ELECT	10uF	20%	16V
C114	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C115	1-126-157-11	ELECT	10uF	20%	16V
C116	1-126-157-11	ELECT	10uF	20%	16V
C117	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C118	1-126-154-11	ELECT	47uF	20%	6.3V
C119	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C120	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C121	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C122	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C123	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C124	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C125	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C126	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C127	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C128	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C129	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C130	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C131	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C132	1-124-638-11	ELECT	22uF	20%	10V
C133	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C136	1-126-301-11	ELECT	1uF	20%	50V
C137	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C138	1-124-254-00	ELECT	0.68uF	20%	50V
C139	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C140	1-126-301-11	ELECT	1uF	20%	50V
C141	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C142	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C143	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C144	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C145	1-126-154-11	ELECT	47uF	20%	6.3V
C146	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C147	1-126-163-11	ELECT	4.7uF	20%	50V
C148	1-126-154-11	ELECT	47uF	20%	6.3V
C149	1-124-464-11	ELECT	0.22uF	20%	50V
C150	1-126-162-11	ELECT	3.3uF	20%	50V
C151	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C152	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C153	1-126-162-11	ELECT	3.3uF	20%	50V
C154	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C155	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C156	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C157	1-126-162-11	ELECT	3.3uF	20%	50V
C158	1-164-634-11	CERAMIC CHIP	1uF		16V
C160	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C161	1-126-162-11	ELECT	3.3uF	20%	50V
C162	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C163	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C164	1-126-162-11	ELECT	3.3uF	20%	50V
C165	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C166	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C167	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C168	1-126-162-11	ELECT	3.3uF	20%	50V
C169	1-164-634-11	CERAMIC CHIP	1uF		16V
C171	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C172	1-126-157-11	ELECT	10uF	20%	16V
C173	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C174	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C175	1-126-157-11	ELECT	10uF	20%	16V
C176	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C177	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C178	1-126-157-11	ELECT	10uF	20%	16V
C179	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C180	1-163-120-00	CERAMIC CHIP	130PF	5%	50V
C181	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C182	1-126-154-11	ELECT	47uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C183	1-163-114-00	CERAMIC CHIP	75PF	5%	50V
C184	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C185	1-124-638-11	ELECT	22uF	20%	10V
C186	1-163-091-00	CERAMIC CHIP	8PF		50V
C187	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C188	1-126-157-11	ELECT	10uF	20%	16V
C189	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C190	1-124-638-11	ELECT	22uF	20%	10V
C191	1-124-638-11	ELECT	22uF	20%	10V
C192	1-126-154-11	ELECT	47uF	20%	6.3V
C193	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C195	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C198	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C199	1-124-638-11	ELECT	22uF	20%	10V
C200	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C201	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C202	1-124-638-11	ELECT	22uF	20%	10V
C205	1-124-638-11	ELECT	22uF	20%	10V
C207	1-124-288-00	ELECT	22uF	20%	10V
C208	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C209	1-124-638-11	ELECT	22uF	20%	10V
C211	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C212	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C213	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C214	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C215	1-216-295-91	CONDCTOR, CHIP	(2012)		
C216	1-216-295-91	CONDCTOR, CHIP	(2012)		
C217	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C218	1-216-039-00	METAL CHIP	390	5%	1/10W
C219	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C220	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C221	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C222	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C223	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C224	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C225	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C226	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C227	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C228	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C229	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C230	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C231	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C232	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C233	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C234	1-126-157-11	ELECT	10uF	20%	16V
C235	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C236	1-163-136-00	CERAMIC CHIP	620PF	5%	50V
C237	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C238	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C239	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C240	1-163-031-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C241	1-163-112-00	CERAMIC CHIP	62PF	5%	50V
C244	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C248	1-126-157-11	ELECT	10uF	20%	16V
C250	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C251	1-126-157-11	ELECT	10uF	20%	16V
C252	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C253	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C254	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C255	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C256	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C257	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C258	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C262	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C263	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C264	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C266	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C267	1-163-087-00	CERAMIC CHIP	4PF		50V
C269	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C271	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C276	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C277	1-126-157-11	ELECT	10uF	20%	16V
C278	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C279	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C280	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C283	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C287	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C288	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C290	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C292	1-163-091-00	CERAMIC CHIP	8PF		50V
C294	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C298	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C302	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C318	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C319	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C387	1-124-638-11	ELECT	22uF	20%	10V
C388	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C401	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C402	1-126-157-11	ELECT	10uF	20%	16V
C404	1-124-638-11	ELECT	22uF	20%	10V
C407	1-124-638-11	ELECT	22uF	20%	10V
C409	1-124-638-11	ELECT	22uF	20%	10V
C410	1-126-157-11	ELECT	10uF	20%	16V
C411	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C413	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C415	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C416	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C417	1-124-443-00	ELECT	100uF	20%	10V

Ref. No.	Part No.	Description			Remark
C418	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C419	1-124-443-00	ELECT	100uF	20%	10V
C420	1-124-638-11	ELECT	22uF	20%	10V
C424	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C430	1-126-157-11	ELECT	10uF	20%	16V
C431	1-126-157-11	ELECT	10uF	20%	16V
C432	1-124-638-11	ELECT	22uF	20%	10V
C433	1-124-638-11	ELECT	22uF	20%	10V
C436	1-124-638-11	ELECT	22uF	20%	10V
C454	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C455	1-126-154-11	ELECT	47uF	20%	6.3V
C490	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C492	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C494	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C496	1-124-638-11	ELECT	22uF	20%	10V
C498	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C499	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C500	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C501	1-124-638-11	ELECT	22uF	20%	10V
C504	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C505	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C506	1-126-176-11	ELECT	220uF	20%	10V
C602	1-124-589-11	ELECT	47uF	20%	16V
C603	1-124-471-00	ELECT	1000uF	20%	6.3V
C605	1-126-157-11	ELECT	10uF	20%	16V
C606	1-124-472-11	ELECT	470uF	20%	10V
C607	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C608	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C609	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C610	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C611	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C614	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C616	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C617	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C618	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C619	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C620	1-126-157-11	ELECT	10uF	20%	16V
C621	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C622	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C623	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C624	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C625	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C626	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C627	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C628	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C629	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C630	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C631	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C632	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C633	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V

Ref. No.	Part No.	Description			Remark
C634	1-163-087-00	CERAMIC CHIP	4PF		50V
C635	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C636	1-126-157-11	ELECT	10uF	20%	16V
C637	1-126-157-11	ELECT	10uF	20%	16V
C638	1-126-157-11	ELECT	10uF	20%	16V
C639	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C640	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C641	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C642	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C643	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C644	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C646	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C647	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C649	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C650	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C651	1-124-638-11	ELECT	22uF	20%	10V
C652	1-124-589-11	ELECT	47uF	20%	16V
C653	1-127-530-11	ELECT(SOLID)	22uF	20%	20V
C655	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C656	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C657	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C659	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C660	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C661	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C662	1-124-589-11	ELECT	47uF	20%	16V
C663	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C664	1-126-301-11	ELECT	1uF	20%	50V
C665	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C666	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C667	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C668	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C669	1-127-530-11	ELECT(SOLID)	22uF	20%	20V
C670	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C671	1-127-491-00	ELECT(SOLID)	22uF	20%	10V
C672	1-126-154-11	ELECT	47uF	20%	6.3V
C673	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C674	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C675	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C676	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C677	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C678	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C679	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C680	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C681	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C682	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C684	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C686	1-124-589-11	ELECT	47uF	20%	16V
C687	1-164-107-11	CERAMIC CHIP	0.15uF	10%	16V
C688	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C689	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V

Ref. No.	Part No.	Description			Remark
C690	1-164-107-11	CERAMIC CHIP	0.15uF	10%	16V
C691	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C692	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C693	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C694	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C695	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C696	1-124-589-11	ELECT	47uF	20%	16V
C702	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C703	1-124-589-11	ELECT	47uF	20%	16V
C706	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C900	1-126-163-11	ELECT	4.7uF	20%	50V
C901	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C902	1-126-157-11	ELECT	10uF	20%	16V
C903	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C904	1-126-163-11	ELECT	4.7uF	20%	50V
C905	1-126-163-11	ELECT	4.7uF	20%	50V
C906	1-126-157-11	ELECT	10uF	20%	16V
C907	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C908	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C909	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C910	1-126-154-11	ELECT	47uF	20%	6.3V
C911	1-124-292-00	ELECT	33uF	20%	6.3V
C912	1-126-301-11	ELECT	1uF	20%	50V
C913	1-124-257-00	ELECT	2.2uF	20%	50V
C914	1-126-157-11	ELECT	10uF	20%	16V
C915	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C916	1-126-157-11	ELECT	10uF	20%	16V
C917	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C918	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C919	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C920	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C921	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C922	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C923	1-126-301-11	ELECT	1uF	20%	50V
C924	1-126-157-11	ELECT	10uF	20%	16V
C925	1-126-301-11	ELECT	1uF	20%	50V
C926	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C928	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C929	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C930	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C931	1-126-157-11	ELECT	10uF	20%	16V
C932	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C933	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C934	1-124-292-00	ELECT	33uF	20%	6.3V
C935	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C936	1-124-638-11	ELECT	22uF	20%	10V
C937	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C938	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C939	1-126-157-11	ELECT	10uF	20%	16V
C940	1-126-154-11	ELECT	47uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C941	1-126-157-11	ELECT	10uF	20%	16V
C942	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C943	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C944	1-124-638-11	ELECT	22uF	20%	10V
C945	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C946	1-124-464-11	ELECT	0.22uF	20%	50V
C947	1-126-154-11	ELECT	47uF	20%	6.3V
C949	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C950	1-124-229-00	ELECT	33uF	20%	10V
C951	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C952	1-126-157-11	ELECT	10uF	20%	16V
C953	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C954	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C955	1-126-157-11	ELECT	10uF	20%	16V
C956	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C957	1-124-257-00	ELECT	2.2uF	20%	50V
C958	1-126-157-11	ELECT	10uF	20%	16V
C959	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C960	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C961	1-126-154-11	ELECT	47uF	20%	6.3V
C962	1-126-157-11	ELECT	10uF	20%	16V
C963	1-126-163-11	ELECT	4.7uF	20%	50V
C964	1-126-163-11	ELECT	4.7uF	20%	50V
C965	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C966	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C968	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C969	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C970	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C971	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C975	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C976	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C977	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C978	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C979	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C980	1-126-301-11	ELECT	1uF	20%	50V
C981	1-126-154-11	ELECT	47uF	20%	6.3V
C982	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN501	1-695-338-11	PIN, CONNECTOR (PC BOARD) 15P			
CN602	1-695-342-31	PIN, CONNECTOR (PC BOARD) 19P			
* CN603	1-564-002-11	PIN, CONNECTOR 3P			
* CN604	1-564-001-11	PIN, CONNECTOR 2P			
* CN605	1-563-373-11	SOCKET, CONNECTOR 25P			
* CN606	1-695-334-11	PIN, CONNECTOR (PC BOARD) 11P			
* CN900	1-695-343-41	PIN, CONNECTOR (PC BOARD) 20P			
		< DIODE >			
D001	8-719-800-76	DIODE 1SS226			
D101	8-719-801-78	DIODE 1SS184			

Ref.No.	Part No.	Description	Remark
D107	8-719-801-78	DIODE 1SS184	
D500	8-719-820-05	DIODE 1SS181	
⚠D601	8-719-210-33	DIODE EC10DS2	
D603	8-719-106-44	DIODE RD9.1M	
D604	8-719-938-78	DIODE SB10-05PCP	
D605	8-719-938-75	DIODE SB05-05CP	
		< FERRITE BEAD >	
FB501	1-412-390-21	INDUCTOR CHIP 0uH	
FB601	1-412-390-21	INDUCTOR CHIP 0uH	
FB602	1-412-390-21	INDUCTOR CHIP 0uH	
FB603	1-412-390-21	INDUCTOR CHIP 0uH	
FB604	1-412-390-21	INDUCTOR CHIP 0uH	
		< FILTER >	
FL101	1-236-848-21	FILTER, LOW PASS	
FL102	1-239-010-11	FILTER, LOW PASS (CCD.PAL.Y)	
FL103	1-236-774-11	FILTER, LOW PASS (Y)	
FL104	1-236-775-11	FILTER, LOW PASS (DEM)	
FL401	1-415-775-21	DELAY LINE, LC	
FL900	1-236-838-21	FILTER, BAND PASS	
FL901	1-236-837-21	FILTER, BAND PASS	
		< IC >	
IC101	8-759-925-74	IC SN74HC04ANS	
IC102	8-759-925-74	IC SN74HC04ANS	
IC103	8-759-009-19	IC MC14081BF	
IC104	8-752-072-55	IC CXA1810AR-T6	
IC105	8-752-333-24	IC CXL1506M	
IC106	8-752-333-24	IC CXL1506M	
IC107	8-759-711-32	IC NJM2245M	
IC108	8-752-066-68	IC CXA1725M	
IC109	8-752-058-03	IC CXA1509AQ	
IC110	8-759-710-07	IC NJM2234M	
IC401	8-759-710-07	IC NJM2234M	
IC402	8-759-182-16	IC MM1196XFBE	
IC500	8-759-288-83	IC MB89091PFV-G-104-BND	
IC501	8-759-074-40	IC PST572DMT-T1	
⚠IC601	8-759-069-28	IC PQ05RF11	
IC602	8-752-857-50	IC CXP87140-041Q	
IC603	8-759-059-42	IC CXA1481AR	
IC604	8-759-998-92	IC LM393D	
IC605	8-759-998-98	IC LM358D	
IC606	8-759-913-06	IC BA6209	
IC607	8-759-945-17	IC MB3775PF	
IC608	8-759-327-49	IC CXA1512M-T3	
IC609	8-759-518-43	IC BA6440-FP	
IC610	8-759-169-11	IC CXA1575M-E2	
⚠IC611	8-759-168-20	IC TA7809S	
IC900	8-759-189-19	IC AN3900NSC-E2	

Ref.No.	Part No.	Description	Remark
IC901	8-759-077-12	IC CXA1542R	
		< JACK >	
J500	1-568-800-11	JACK, ULTRA SMALL (LANC)	
		< COIL >	
L008	1-408-982-21	INDUCTOR 100uH	
L009	1-408-970-21	INDUCTOR 10uH	
L010	1-408-975-21	INDUCTOR 27uH	
L101	1-408-978-21	INDUCTOR 47uH	
L103	1-408-970-21	INDUCTOR 10uH	
L104	1-408-978-21	INDUCTOR 47uH	
L105	1-408-970-21	INDUCTOR 10uH	
L106	1-408-978-21	INDUCTOR 47uH	
L107	1-408-974-21	INDUCTOR 22uH	
L108	1-408-970-21	INDUCTOR 10uH	
L110	1-408-968-21	INDUCTOR 6.8uH	
L111	1-408-982-21	INDUCTOR 100uH	
L112	1-408-975-21	INDUCTOR 27uH	
L113	1-408-982-21	INDUCTOR 100uH	
L114	1-408-974-21	INDUCTOR 22uH	
L115	1-408-967-21	INDUCTOR 5.6uH	
L116	1-408-967-21	INDUCTOR 5.6uH	
L117	1-408-973-21	INDUCTOR 18uH	
L118	1-408-982-21	INDUCTOR 100uH	
L121	1-408-970-21	INDUCTOR 10uH	
L122	1-408-976-21	INDUCTOR 33uH	
L123	1-408-987-21	INDUCTOR 330uH	
L124	1-408-989-21	INDUCTOR 470uH	
L125	1-408-985-21	INDUCTOR 180uH	
L126	1-408-977-21	INDUCTOR 39uH	
L127	1-408-963-11	INDUCTOR 2.7uH	
L128	1-408-968-21	INDUCTOR 6.8uH	
L129	1-408-970-21	INDUCTOR 10uH	
L130	1-408-973-21	INDUCTOR 18uH	
L131	1-408-987-21	INDUCTOR 330uH	
L132	1-408-983-21	INDUCTOR 120uH	
L135	1-408-965-21	INDUCTOR 3.9uH	
L136	1-408-973-21	INDUCTOR 18uH	
L138	1-408-973-21	INDUCTOR 18uH	
L139	1-408-973-21	INDUCTOR 18uH	
L141	1-408-973-21	INDUCTOR 18uH	
L144	1-408-975-21	INDUCTOR 27uH	
L401	1-408-978-21	INDUCTOR 47uH	
L406	1-408-970-21	INDUCTOR 10uH	
L490	1-408-970-21	INDUCTOR 10uH	
L491	1-408-963-11	INDUCTOR 2.7uH	
L601	1-408-982-21	INDUCTOR 100uH	
L603	1-408-978-21	INDUCTOR 47uH	
L604	1-408-978-21	INDUCTOR 47uH	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
L605	1-410-997-31	INDUCTOR CHIP 2.2uH	
L606	1-408-982-21	INDUCTOR 100uH	
L607	1-408-978-21	INDUCTOR 47uH	
L608	1-424-522-21	COIL, CHOKE 10uH	
L609	1-424-524-21	COIL, CHOKE 47uH	
L610	1-424-524-21	COIL, CHOKE 47uH	
L611	1-408-978-21	INDUCTOR 47uH	
L612	1-408-978-21	INDUCTOR 47uH	
L900	1-408-982-21	INDUCTOR 100uH	
L902	1-408-970-21	INDUCTOR 10uH	
		< IC LINK >	
⚠PS602	1-532-605-00	LINK, IC 0.4A ICP-N10	
		< TRANSISTOR >	
Q106	8-729-901-06	TRANSISTOR DTA144EK	
Q017	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q018	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q101	8-729-420-12	TRANSISTOR XN4213	
Q103	8-729-901-06	TRANSISTOR DTA144EK	
Q104	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q105	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q106	8-729-421-19	TRANSISTOR UN2213	
Q107	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q108	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q109	8-729-420-10	TRANSISTOR XN4115	
Q110	8-729-420-10	TRANSISTOR XN4115	
Q111	8-729-421-19	TRANSISTOR UN2213	
Q112	8-729-216-22	TRANSISTOR 2SA1162-G	
Q113	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q114	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q115	8-729-216-22	TRANSISTOR 2SA1162-G	
Q116	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q117	8-729-216-22	TRANSISTOR 2SA1162-G	
Q118	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q120	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q121	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q122	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q123	8-729-216-22	TRANSISTOR 2SA1162-G	
Q124	8-729-216-22	TRANSISTOR 2SA1162-G	
Q126	8-729-216-22	TRANSISTOR 2SA1162-G	
Q127	8-729-216-22	TRANSISTOR 2SA1162-G	
Q128	8-729-420-12	TRANSISTOR XN4213	
Q129	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q130	8-729-421-19	TRANSISTOR UN2213	
Q131	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q132	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q133	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q135	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q136	8-729-422-27	TRANSISTOR 2SD601A-Q	

Ref. No.	Part No.	Description	Remark
Q137	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q138	8-729-402-81	TRANSISTOR XN4501	
Q139	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q140	8-729-901-06	TRANSISTOR DTA144EK	
Q141	8-729-901-06	TRANSISTOR DTA144EK	
Q142	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q143	8-729-402-81	TRANSISTOR XN4501	
Q144	8-729-901-06	TRANSISTOR DTA144EK	
Q145	8-729-901-06	TRANSISTOR DTA144EK	
Q146	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q147	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q148	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q149	8-729-216-22	TRANSISTOR 2SA1162-G	
Q150	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q151	8-729-421-19	TRANSISTOR UN2213	
Q152	8-729-421-19	TRANSISTOR UN2213	
Q153	8-729-421-19	TRANSISTOR UN2213	
Q154	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q155	8-729-420-20	TRANSISTOR XN4312	
Q156	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q157	8-729-424-32	TRANSISTOR UN2117	
Q158	8-729-421-19	TRANSISTOR UN2213	
Q159	8-729-424-70	TRANSISTOR UN2217	
Q160	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q161	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q162	8-729-216-22	TRANSISTOR 2SA1162-G	
Q163	8-729-216-22	TRANSISTOR 2SA1162-G	
Q164	8-729-216-22	TRANSISTOR 2SA1162-G	
Q166	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q167	8-729-421-19	TRANSISTOR UN2213	
Q168	8-729-421-19	TRANSISTOR UN2213	
Q170	8-729-421-19	TRANSISTOR UN2213	
Q175	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q176	8-729-421-19	TRANSISTOR UN2213	
Q180	8-729-421-19	TRANSISTOR UN2213	
Q181	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q182	8-729-420-12	TRANSISTOR XN4213	
Q185	8-729-216-22	TRANSISTOR 2SA1162-G	
Q186	8-729-216-22	TRANSISTOR 2SA1162-G	
Q187	8-729-421-19	TRANSISTOR UN2213	
Q189	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q190	8-729-901-06	TRANSISTOR DTA144EK	
Q191	8-729-421-19	TRANSISTOR UN2213	
Q192	8-729-421-19	TRANSISTOR UN2213	
Q401	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q402	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q403	8-729-216-22	TRANSISTOR 2SA1162-G	
Q407	8-729-216-22	TRANSISTOR 2SA1162-G	
Q408	8-729-216-22	TRANSISTOR 2SA1162-G	
Q410	8-729-216-22	TRANSISTOR 2SA1162-G	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
Q412	8-729-402-81	TRANSISTOR XN4501	
Q413	8-729-402-84	TRANSISTOR XN4601	
Q414	8-729-216-22	TRANSISTOR 2SA1162-G	
Q490	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q491	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q493	8-729-420-12	TRANSISTOR XN4213	
Q500	8-729-403-02	TRANSISTOR XN4212	
Q602	8-729-421-19	TRANSISTOR UN2213	
Q603	8-729-421-19	TRANSISTOR UN2213	
Q604	8-729-424-08	TRANSISTOR UN2111	
Q609	8-729-420-12	TRANSISTOR XN4213	
⚠Q610	8-729-820-86	TRANSISTOR 2SB1121-ST	
⚠Q611	8-729-820-86	TRANSISTOR 2SB1121-ST	
Q614	8-729-901-06	TRANSISTOR DTA144EK	
Q900	8-729-421-19	TRANSISTOR UN2213	
Q901	8-729-403-07	TRANSISTOR XN1213	
Q902	8-729-901-06	TRANSISTOR DTA144EK	
Q903	8-729-922-87	TRANSISTOR 2SD1757K-RS	
Q904	8-729-402-19	TRANSISTOR XN6501	
Q905	8-729-402-19	TRANSISTOR XN6501	
Q906	8-729-922-87	TRANSISTOR 2SD1757K-RS	
Q907	8-729-901-06	TRANSISTOR DTA144EK	
Q908	8-729-402-19	TRANSISTOR XN6501	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R032	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R038	1-216-295-91	CONDUCTOR, CHIP (2012)	
R041	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R042	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R043	1-216-033-00	METAL CHIP 220 5% 1/10W	
R044	1-216-021-00	METAL CHIP 68 5% 1/10W	
R046	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R047	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R048	1-216-045-00	METAL CHIP 680 5% 1/10W	
R049	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R050	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R051	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R052	1-216-039-00	METAL CHIP 390 5% 1/10W	
R053	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R054	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R071	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R072	1-216-041-00	METAL CHIP 470 5% 1/10W	
R089	1-216-295-91	CONDCTOR, CHIP (2012)	
R101	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R102	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R103	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R104	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R105	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R106	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R107	1-216-295-91	CONDCTOR, CHIP (2012)	
R108	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R109	1-208-810-11	METAL GLAZE 15K 0.50% 1/10W	
R110	1-208-814-11	METAL GLAZE 22K 0.50% 1/10W	
R111	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R112	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R113	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R114	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R115	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R116	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R117	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R118	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R119	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R120	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R121	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R122	1-208-794-11	METAL GLAZE 3.3K 0.50% 1/10W	
R123	1-208-784-11	METAL GLAZE 1.2K 0.50% 1/10W	
R124	1-208-772-11	METAL GLAZE 390 0.50% 1/10W	
R125	1-208-774-11	METAL GLAZE 470 0.50% 1/10W	
R126	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R127	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R128	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R129	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R130	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R131	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R132	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R133	1-216-019-00	METAL CHIP 56 5% 1/10W	
R134	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R135	1-208-812-11	METAL GLAZE 18K 0.50% 1/10W	
R136	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R137	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R138	1-216-058-00	METAL GLAZE 2.4K 5% 1/10W	
R139	1-216-058-00	METAL GLAZE 2.4K 5% 1/10W	
R140	1-216-058-00	METAL GLAZE 2.4K 5% 1/10W	
R141	1-216-058-00	METAL GLAZE 2.4K 5% 1/10W	
R142	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R143	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R144	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R147	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R148	1-216-045-00	METAL CHIP 680 5% 1/10W	
R149	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R150	1-216-027-00	METAL CHIP 120 5% 1/10W	
R152	1-216-295-91	CONDCTOR, CHIP (2012)	
R153	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R154	1-216-295-91	CONDCTOR, CHIP (2012)	
R157	1-216-295-91	CONDCTOR, CHIP (2012)	
R158	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R159	1-216-027-00	METAL CHIP 120 5% 1/10W	
R161	1-216-295-91	CONDCTOR, CHIP (2012)	
R163	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R165	1-216-085-00	METAL CHIP 33K 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VS-121PH

Ref.No.	Part No.	Description				Remark
R166	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R167	1-216-041-00	METAL CHIP	470	5%	1/10W	
R168	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R169	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R170	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R171	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R172	1-216-041-00	METAL CHIP	470	5%	1/10W	
R173	1-216-041-00	METAL CHIP	470	5%	1/10W	
R174	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R175	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R176	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R177	1-216-041-00	METAL CHIP	470	5%	1/10W	
R178	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R179	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R180	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R181	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R182	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R183	1-216-033-00	METAL CHIP	220	5%	1/10W	
R184	1-216-035-00	METAL CHIP	270	5%	1/10W	
R185	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R186	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R187	1-216-035-00	METAL CHIP	270	5%	1/10W	
R189	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R190	1-216-045-00	METAL CHIP	680	5%	1/10W	
R191	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R192	1-216-041-00	METAL CHIP	470	5%	1/10W	
R193	1-216-045-00	METAL CHIP	680	5%	1/10W	
R194	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R195	1-216-045-00	METAL CHIP	680	5%	1/10W	
R196	1-216-047-00	METAL CHIP	820	5%	1/10W	
R197	1-216-021-00	METAL CHIP	68	5%	1/10W	
R198	1-216-035-00	METAL CHIP	270	5%	1/10W	
R200	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R202	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R205	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R207	1-216-041-00	METAL CHIP	470	5%	1/10W	
R208	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R209	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R210	1-216-041-00	METAL CHIP	470	5%	1/10W	
R211	1-216-041-00	METAL CHIP	470	5%	1/10W	
R212	1-216-041-00	METAL CHIP	470	5%	1/10W	
R213	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R214	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R215	1-216-039-00	METAL CHIP	390	5%	1/10W	
R216	1-216-040-00	METAL CHIP	430	5%	1/10W	
R217	1-216-033-00	METAL CHIP	220	5%	1/10W	
R218	1-216-031-00	METAL CHIP	180	5%	1/10W	
R219	1-216-031-00	METAL CHIP	180	5%	1/10W	
R220	1-216-033-00	METAL CHIP	220	5%	1/10W	
R222	1-216-045-00	METAL CHIP	680	5%	1/10W	
R223	1-216-041-00	METAL CHIP	470	5%	1/10W	
R224	1-216-041-00	METAL CHIP	470	5%	1/10W	
R226	1-216-039-00	METAL CHIP	390	5%	1/10W	
R227	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R228	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R229	1-216-037-00	METAL CHIP	330	5%	1/10W	
R230	1-216-047-00	METAL CHIP	820	5%	1/10W	
R231	1-216-047-00	METAL CHIP	820	5%	1/10W	
R233	1-216-047-00	METAL CHIP	820	5%	1/10W	
R234	1-216-047-00	METAL CHIP	820	5%	1/10W	
R235	1-216-041-00	METAL CHIP	470	5%	1/10W	
R236	1-216-295-91	CONDCTOR, CHIP (2012)				
R237	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R238	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R239	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R240	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R241	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R242	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R243	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R244	1-216-295-91	CONDCTOR, CHIP (2012)				
R245	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R246	1-216-047-00	METAL CHIP	820	5%	1/10W	
R247	1-216-027-00	METAL CHIP	120	5%	1/10W	
R248	1-216-037-00	METAL CHIP	330	5%	1/10W	
R249	1-216-047-00	METAL CHIP	820	5%	1/10W	
R250	1-216-041-00	METAL CHIP	470	5%	1/10W	
R251	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R252	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R253	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R254	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R255	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R256	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R257	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R258	1-216-047-00	METAL CHIP	820	5%	1/10W	
R259	1-216-041-00	METAL CHIP	470	5%	1/10W	
R260	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R261	1-216-074-00	METAL CHIP	11K	5%	1/10W	
R262	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R263	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R264	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R265	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R266	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R267	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R268	1-216-029-00	METAL CHIP	150	5%	1/10W	
R269	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R270	1-216-047-00	METAL CHIP	820	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R271	1-216-041-00	METAL CHIP 470 5% 1/10W	
R272	1-216-041-00	METAL CHIP 470 5% 1/10W	
R273	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R274	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R275	1-216-041-00	METAL CHIP 470 5% 1/10W	
R276	1-216-031-00	METAL CHIP 180 5% 1/10W	
R277	1-216-035-00	METAL CHIP 270 5% 1/10W	
R278	1-216-295-91	CONDCTOR, CHIP (2012)	
R279	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R280	1-216-117-00	METAL CHIP 680K 5% 1/10W	
R281	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R282	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R283	1-216-047-00	METAL CHIP 820 5% 1/10W	
R284	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R285	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R286	1-208-824-11	METAL GLAZE 56K 0.50% 1/10W	
R287	1-208-832-11	METAL GLAZE 120K 0.50% 1/10W	
R288	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R289	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R290	1-216-041-00	METAL CHIP 470 5% 1/10W	
R291	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R292	1-216-041-00	METAL CHIP 470 5% 1/10W	
R293	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R294	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R295	1-216-037-00	METAL CHIP 330 5% 1/10W	
R296	1-216-295-91	CONDCTOR, CHIP (2012)	
R297	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R302	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R304	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R305	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R309	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R310	1-216-047-00	METAL CHIP 820 5% 1/10W	
R311	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R312	1-216-033-00	METAL CHIP 220 5% 1/10W	
R314	1-216-039-00	METAL CHIP 390 5% 1/10W	
R316	1-216-047-00	METAL CHIP 820 5% 1/10W	
R319	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R320	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R321	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R324	1-216-019-00	METAL CHIP 56 5% 1/10W	
R325	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R326	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R332	1-216-045-00	METAL CHIP 680 5% 1/10W	
R334	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R335	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R336	1-216-031-00	METAL CHIP 180 5% 1/10W	
R337	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R338	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R339	1-216-013-00	METAL CHIP 33 5% 1/10W	
R340	1-216-041-00	METAL CHIP 470 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R341	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R342	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R346	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R347	1-216-295-91	CONDCTOR, CHIP (2012)	
R350	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R351	1-216-295-91	CONDCTOR, CHIP (2012)	
R360	1-216-033-00	METAL CHIP 220 5% 1/10W	
R361	1-216-029-00	METAL CHIP 150 5% 1/10W	
R363	1-216-031-00	METAL CHIP 180 5% 1/10W	
R367	1-163-035-00	CERAMIC CHIP 0.047uF	50V
R368	1-216-295-91	CONDCTOR, CHIP (2012)	
R371	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R376	1-216-295-91	CONDCTOR, CHIP (2012)	
R390	1-216-295-91	CONDCTOR, CHIP (2012)	
R392	1-216-295-91	CONDCTOR, CHIP (2012)	
R394	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R395	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R400	1-216-033-00	METAL CHIP 220 5% 1/10W	
R402	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R403	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R404	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R405	1-216-035-00	METAL CHIP 270 5% 1/10W	
R406	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R407	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R408	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R409	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R410	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R420	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R421	1-216-295-91	CONDCTOR, CHIP (2012)	
R422	1-216-295-91	CONDCTOR, CHIP (2012)	
R423	1-216-295-91	CONDCTOR, CHIP (2012)	
R430	1-163-031-11	CERAMIC CHIP 0.01MF	50V
R431	1-216-041-00	METAL CHIP 470 5% 1/10W	
R432	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R434	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R435	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R437	1-216-041-00	METAL CHIP 470 5% 1/10W	
R438	1-216-033-00	METAL CHIP 220 5% 1/10W	
R439	1-216-033-00	METAL CHIP 220 5% 1/10W	
R440	1-216-041-00	METAL CHIP 470 5% 1/10W	
R441	1-216-041-00	METAL CHIP 470 5% 1/10W	
R442	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R443	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R444	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R445	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R446	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R447	1-208-768-11	METAL GLAZE 240 0.50% 1/10W	
R448	1-216-013-00	METAL CHIP 33 5% 1/10W	
R449	1-208-770-11	METAL GLAZE 330 0.50% 1/10W	
R450	1-216-041-00	METAL CHIP 470 5% 1/10W	

Ref. No.	Part No.	Description				Remark
R452	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R453	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R455	1-216-295-91	CONDCTOR, CHIP (2012)				
R456	1-216-295-91	CONDCTOR, CHIP (2012)				
R457	1-216-021-00	METAL CHIP	68	5%	1/10W	
R458	1-216-021-00	METAL CHIP	68	5%	1/10W	
R459	1-216-021-00	METAL CHIP	68	5%	1/10W	
R460	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R461	1-216-021-00	METAL CHIP	68	5%	1/10W	
R465	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R467	1-216-037-00	METAL CHIP	330	5%	1/10W	
R471	1-216-295-91	CONDCTOR, CHIP (2012)				
R474	1-216-295-91	CONDCTOR, CHIP (2012)				
R476	1-216-295-91	CONDCTOR, CHIP (2012)				
R484	1-216-021-00	METAL CHIP	68	5%	1/10W	
R485	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R489	1-216-295-91	CONDCTOR, CHIP (2012)				
R493	1-216-037-00	METAL CHIP	330	5%	1/10W	
R494	1-216-041-00	METAL CHIP	470	5%	1/10W	
R496	1-216-037-00	METAL CHIP	330	5%	1/10W	
R497	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R498	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R499	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R500	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R501	1-216-041-00	METAL CHIP	470	5%	1/10W	
R502	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R503	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R504	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R505	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R506	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R507	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R509	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R511	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R512	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R514	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R515	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R517	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R518	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R519	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R522	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R523	1-216-295-91	CONDCTOR, CHIP (2012)				
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R526	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R527	1-216-295-91	CONDCTOR, CHIP (2012)				
R528	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R533	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R534	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R536	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R537	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R538	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R539	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R540	1-216-295-91	CONDCTOR, CHIP (2012)				
R543	1-216-295-91	CONDCTOR, CHIP (2012)				
R544	1-216-295-91	CONDCTOR, CHIP (2012)				
R546	1-216-295-91	CONDCTOR, CHIP (2012)				
R547	1-216-295-91	CONDCTOR, CHIP (2012)				
R548	1-216-295-91	CONDCTOR, CHIP (2012)				
R550	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R556	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R566	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R567	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R568	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R570	1-216-295-91	CONDCTOR, CHIP (2012)				
R571	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R572	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R573	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R574	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R580	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R581	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R583	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R585	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R586	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R589	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R591	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R596	1-216-295-91	CONDCTOR, CHIP (2012)				
R597	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R598	1-216-295-91	CONDCTOR, CHIP (2012)				
R600	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R601	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R602	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R603	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R604	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R605	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R606	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R607	1-216-295-91	CONDCTOR, CHIP (2012)				
R608	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R609	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R610	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R611	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R612	1-216-295-91	CONDCTOR, CHIP (2012)				
R613	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R614	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R615	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R616	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R617	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R618	1-216-089-00	METAL CHIP	47K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R620	1-216-045-00	METAL CHIP	680	5%	1/10W	
R621	1-216-295-91	CONDCTOR, CHIP (2012)				
R625	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R626	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R627	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R628	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R629	1-216-295-91	CONDCTOR, CHIP (2012)				
R630	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R631	1-216-295-91	CONDCTOR, CHIP (2012)				
R632	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R633	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R634	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R635	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R636	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R637	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R638	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R639	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R640	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R641	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R642	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R643	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R644	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R645	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R646	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R647	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R648	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R649	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R650	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R651	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R652	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R653	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R654	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R655	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R656	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R657	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R658	1-216-041-00	METAL CHIP	470	5%	1/10W	
R659	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R660	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R661	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R662	1-216-041-00	METAL CHIP	470	5%	1/10W	
R663	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R664	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R665	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R666	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R667	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R668	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R669	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R670	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R671	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R672	1-216-089-00	METAL CHIP	47K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R673	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R674	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R675	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R676	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R677	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R678	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R679	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R680	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R681	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R684	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R685	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R686	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R687	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R688	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R689	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R690	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R691	1-216-001-00	METAL CHIP	10	5%	1/10W	
R692	1-216-001-00	METAL CHIP	10	5%	1/10W	
R693	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R694	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R695	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R696	1-216-295-91	CONDCTOR, CHIP (2012)				
R697	1-216-295-91	CONDCTOR, CHIP (2012)				
R698	1-216-295-91	CONDCTOR, CHIP (2012)				
R699	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R701	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R703	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R704	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R705	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R706	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R708	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R709	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R710	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R711	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R712	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R713	1-216-172-00	METAL CHIP	82	5%	1/8W	
R714	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R715	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R716	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R717	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R718	1-216-037-00	METAL CHIP	330	5%	1/10W	
R719	1-216-037-00	METAL CHIP	330	5%	1/10W	
R720	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R721	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R722	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R723	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R724	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R731	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R732	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R734	1-216-295-91	CONDCTOR, CHIP (2012)				

Ref. No.	Part No.	Description				Remark
R737	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R738	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R739	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R740	1-216-047-00	METAL CHIP	820	5%	1/10W	
R741	1-208-804-11	METAL GLAZE	8.2K	0.50%	1/10W	
R742	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R743	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R744	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R745	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R746	1-216-013-00	METAL CHIP	33	5%	1/10W	
R747	1-216-013-00	METAL CHIP	33	5%	1/10W	
R748	1-216-013-00	METAL CHIP	33	5%	1/10W	
R749	1-216-013-00	METAL CHIP	33	5%	1/10W	
R750	1-216-033-00	METAL CHIP	220	5%	1/10W	
R751	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R752	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R753	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R754	1-216-045-00	METAL CHIP	680	5%	1/10W	
R755	1-216-045-00	METAL CHIP	680	5%	1/10W	
R756	1-216-048-00	METAL CHIP	910	5%	1/10W	
R757	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R758	1-208-832-11	METAL GLAZE	120K	0.50%	1/10W	
R760	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R761	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R763	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R765	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R767	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R769	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R770	1-219-107-91	METAL GLAZE	1.5	5%	1/8W	
R771	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R772	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R773	1-219-107-91	METAL GLAZE	1.5	5%	1/8W	
R774	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R775	1-219-107-91	METAL GLAZE	1.5	5%	1/8W	
R776	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R777	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R778	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R779	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R780	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R781	1-216-078-00	METAL GLAZE	16K	5%	1/10W	
R782	1-208-814-11	METAL GLAZE	22K	0.50%	1/10W	
R783	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R784	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R785	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R786	1-216-295-91	CONDCTOR, CHIP	(2012)			
R787	1-216-019-00	METAL CHIP	56	5%	1/10W	
R788	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R789	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R790	1-216-295-91	CONDCTOR, CHIP	(2012)			
R794	1-217-671-11	METAL CHIP	1	5%	1/10W	
R795	1-217-671-11	METAL CHIP	1	5%	1/10W	
R796	1-217-671-11	METAL CHIP	1	5%	1/10W	
R797	1-216-033-00	METAL CHIP	220	5%	1/10W	
R798	1-217-671-11	METAL CHIP	1	5%	1/10W	
R799	1-216-033-00	METAL CHIP	220	5%	1/10W	
R900	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R901	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R902	1-216-295-91	CONDCTOR, CHIP	(2012)			
R903	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R904	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R905	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R906	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R907	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R908	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R909	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R910	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R911	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R912	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R913	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R914	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R916	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R917	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R918	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R919	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R920	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R924	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R925	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R926	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R927	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R928	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R929	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R930	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R931	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R932	1-216-033-00	METAL CHIP	220	5%	1/10W	
R933	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R934	1-216-047-00	METAL CHIP	820	5%	1/10W	
R935	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R936	1-216-047-00	METAL CHIP	820	5%	1/10W	
R937	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R938	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R939	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R940	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R941	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R942	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R943	1-216-033-00	METAL CHIP	220	5%	1/10W	
R944	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R945	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R946	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R948	1-216-295-91	CONDCTOR, CHIP	(2012)			
R949	1-216-049-91	METAL GLAZE	1K	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R950	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R951	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R952	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R955	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R956	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R957	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R958	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R961	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R962	1-216-295-91	CONDCTOR, CHIP (2012)	
R963	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R964	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R965	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R966	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R967	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R968	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R969	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R970	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R971	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R972	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R973	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R980	1-216-295-91	CONDCTOR, CHIP (2012)	
R982	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R983	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R984	1-216-295-91	CONDCTOR, CHIP (2012)	
R989	1-216-295-91	CONDCTOR, CHIP (2012)	
R996	1-216-295-91	CONDCTOR, CHIP (2012)	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV101	1-241-396-11	RES, ADJ, METAL GLAZE 22K	
RV102	1-241-396-11	RES, ADJ, METAL GLAZE 22K	
RV103	1-241-396-11	RES, ADJ, METAL GLAZE 22K	
RV104	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K	
RV105	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K	
RV106	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K	
RV107	1-241-394-11	RES, ADJ, METAL GLAZE 4.7K	
RV108	1-241-391-11	RES, ADJ, METAL GLAZE 470	
RV109	1-241-392-11	RES, ADJ, METAL GLAZE 1K	
RV110	1-241-392-11	RES, ADJ, METAL GLAZE 1K	
RV111	1-241-393-21	RES, ADJ, METAL GLAZE 2.2K	
RV112	1-241-393-21	RES, ADJ, METAL GLAZE 2.2K	
RV113	1-241-392-11	RES, ADJ, METAL GLAZE 1K	
RV114	1-241-392-11	RES, ADJ, METAL GLAZE 1K	
RV401	1-241-391-11	RES, ADJ, METAL GLAZE 470	
RV500	1-241-395-11	RES, ADJ, METAL GLAZE 10K	
RV501	1-241-395-11	RES, ADJ, METAL GLAZE 10K	
RV601	1-241-396-11	RES, ADJ, METAL GLAZE 22K	
RV901	1-241-395-11	RES, ADJ, METAL GLAZE 10K	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X101	1-577-117-11	VIBRATOR, CRYSTAL (4.43MHz)	
X500	1-579-175-11	VIBRATOR, CERAMIC (10MHz)	
X601	1-579-368-31	VIBRATOR, CRYSTAL (12MHz)	
X602	1-577-116-21	OSCILLATOR, CRYSTAL (16MHz)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
⚠2	1-769-767-11	CORD, POWER	
⚠3	1-468-021-11	POWER BLOCK	
5	1-769-100-11	CABLE, FLAT (FMV-2)	
6	1-769-099-11	CABLE, FLAT (FRV-2)	
8	1-769-103-11	CABLE, FLAT (FRV-3)	
12	1-769-102-11	CABLE, FLAT (FFV-5)	
16	1-691-471-11	CONNECTOR, TRANSLATION 11P	
17	1-649-565-11	FP-696 FLEXIBLE BOARD	
23	1-649-836-11	FP-695 FLEXIBLE BOARD	
24	1-691-254-13	CONNECTOR, TRANSLATION 10P	
25	1-764-137-11	CONNECTOR, TRANSLATION 15P	
752	A-7049-660-A	DRUM ASSY, UPPER, ROTARY (DGR-0B8-R)	
CN002	1-750-620-11	CONNECTOR (MM8 MD)	
M901	A-7048-787-A	DRUM ASSY (DGU-0B8A-R)	
M902	8-835-499-01	MOTOR, DC SCE-0501A (CAPSTAN)	
M903	X-3942-946-1	MOTOR ASSY, CAM (LOADING)	
S901	1-692-498-11	SWITCH, ROTARY	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-473-181-11	REMOTE COMMANDER (RMT-V176)	
	1-573-291-11	CONNECTOR, CONVERSION	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (STEREO), 1.5m)	
	1-751-498-21	CORD, CONNECTION (S VIDEO connecting cable, 1.5m)	
	3-798-424-41	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH, DUTCH, SWEDISH, ITALIAN, PORTUGUESE, DANISH)	
*	3-965-123-01	CUSHION (R)	
*	3-965-122-01	CUSHION (F)	
*	3-963-028-01	INDIVIDUAL CARTON	

****

****
HARDWARE LIST
****

Ref. No.	Part No.	Description	Remark
#1	7-685-871-01	SCREW +BVTT 3X6 (S)	
#2	7-685-647-79	SCREW +BVTP 3X10 TYPE2	
#3	7-685-133-19	SCREW +P 2.6X6 TYPE2 NON-SLIT	
#4	7-682-645-01	SCREW +PS 3X4	
#5	7-621-255-15	SCREW +B 2X3	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
#6	7-628-253-15	SCREW +PS 2X5	
#7	7-688-001-01	W 2, MIDDLE	
#8	7-688-003-01	W 3, SMALL	

SECTION 7

INTERFACES, IC PIN FUNCTIONS

7-1. SYSTEM CONTROL – VIDEO・AUDIO BLOCK INTERFACE (VS-121 BOARD)

NAME	I/O	No.	VTR MODE								
			STOP	FF	REW	×2	PB	PICTURE SEARCH		PB・PAUSE	REC
								CUE	REVIEW		
SP/$\overline{\text{LP}}$	O	IC602 ⑧	*1	H	H	*1	*2	*2	*2	*1	*H
V PB MODE	O	IC002 (98)	L	L	L	H	H	H	H	H	L
JOG VD	O	IC602 ②	L	L	L	*3	L	*3	*3	*3	L
$\overline{\text{RP PB MODE}}$	O	IC602 ⑤	L	L	L	L	L	L	L	L	H
$\overline{\text{FE ON}}$	O	IC602 ⑥	H	H	H	H	H	H	H	H	L
RF SWP	O	IC602 (99)	L	*4	*4	*4	*4	*4	*4	*4	*4
JOG	O	IC602 ④	L	L	L	H	L	H	H	H	L
V SYNC	I	IC602 (66)	*5	*5	*5	*5	*5	*5	*5	*5	*5
AUDIO PB	O	IC602 (84)	L	L	L	H	H	H	H	H	L
AUDIO MUTE	O	IC602 (72)	L	L	L	H	L	H	H	H	L
$\overline{\text{VIDEO CS}}$	O	IC602 ㉕	V-cycle "Low" pulse								
C SO2	O	IC602 (80)	V-cycle pulse rank								
C SCK2	O	IC602 (81)	V-cycle "Low" pulse rank								

*1. This outputs the result of determining what was the previous mode.
"High" output in SP mode, "Low" output in LP mode.

*2. This outputs the result of determinig which recode mode the playback tape has.
It becomes "High" when SP mode is entered and "Low" when LP mode is entered.

*3. Pseudo VD signal.

*4. Pulse of 25Hz, 50% duty (synchronized with the rotation of the drum).

*5. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (This signal has positive polarity).

7-2. MECHANICAL CONTROL – SERVO BLOCK INTERFACE (VS-121 BOARD)

NAME	I/O	No.	VTR MODE								
			STOP	FF	REW	×2	PB	PICTURE SEARCH		PB・PAUSE	REC
								CUE	REVIEW		
T.REEL FG	I	IC602 (67)	—	*1	*1	*1	*1	*1	*1	—	*1
S.REEL FG	I	IC602 (64)	—	*1	*1	*1	*1	*1	*1	—	*1
ATF ERROR	I	IC602 (61)	—	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC602 (68)	—	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC602 (69)	—	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ HMS CAP FG	I	IC602 (70), (77)	—	*5	*5	*5	*5	*5	*5	—	*5
CAP ON	O	IC602 (91)	L	H	H	H	H	H	H	L	H
REF PILOT	O	IC602 (85)	*7	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC602 ⑤	L	L	L	L	L	L	L	L	H
DRUM RVS *9	O	IC602 (74)	L	L	L	L	L	L	L	L	L
CAP FWD/$\overline{\text{RVS}}$	O	IC602 (92)	L	H	L	H	H	H	L	L	H
DRUM PWM	O	IC602 (76)	*8	*8	*8	*8	*8	*8	*8	*8	*8
CAP PWM	O	IC602 (75)	L	*8	*8	*8	*8	*8	*8	L	*8

*1. Pulses are input by the rotation of the reel. (0.7 to 2sec period during REC/PB mode)

*2. ATF error voltage input.

*3. One PG pulse is input by one rotation of the drum. Approximately 25Hz.

*4. 12 FG pulses are input by one rotation of the drum. Approximately 300Hz.

*5. FG pulses are input by one rotation of the capstan. Approximately 1000Hz during REC/PB (SP)mode.

*6. Four frequencies are output as synchronized with the rotation of the drum.
f1=101.02kHz, f2=117.19kHz, f3=162.76kHz, f4=146.45kHz

*7. f2 (117.19kHz) or f3 (162.76kHz) is output.

*8. PWM signal with a period of 16 μsec.

*9. Normally "Low". Temporarily "High" when a full top cassette is loaded (drum reverse rotation).

7-3. MECHANICAL CONTROL MICROCOMPUTER CXP87140-041Q (VS-121 BOARD IC602) PORT FUNCTION DESCRIPTION

Pin No.	Signal	I/O	Function
1	VIRSK	–	Not used.
2	JOG VD	O	Pseudo VD signal to be inserted into playback video signal when speed change playback is performed.
3	N. C.	–	Not used.
4	JOG	O	Speed change playback/normal playback select signal for the video circuit. "High" to select speed change playback.
5	$\overline{\text{RP PB MODE}}$	O	REC/PB select signal for REC/PB amplifier and ATF servo IC. "Low" to select PB mode.
6	$\overline{\text{FE ON}}$	O	Flying erase oscillation ON/OFF control signal. "Low" to activate the oscillation.
7	INT VD	O	Timing reference for serial data communication. V-cycle "Low" pulse.
8	SP/$\overline{\text{LP}}$	O	SP/LP select signal. "Low" to select LP.
9	N. C.	–	Not used.
10	HI8/$\overline{\text{NORMAL}}$	O	Hi8/$\overline{\text{NORMAL}}$ select signal (On play, Auto). "High" for Hi8.
11	MACRO DET	I	Connected to GND.
12	$\overline{\text{EDIT}}$	I	Not used.
13	CC DOWN	I	Cassette compartment lock switch input. "Low" for lock.
14	REC PROOF SW	I	REC PROOF switch input. "High" for protected REC.
15	ME/$\overline{\text{MP}}$ SW	I	ME/MP switch input. "Low" for MP, "High" for ME.
16	MPHG/$\overline{\text{MP}}$ SW	I	MPHG/MP switch input. "Low" for MP, "High" for MPHG.
17	8/9 SW	I	Not used.
18	10/13 SW	I	Not used.
19	MSW 3	I	Mechanical deck MATRIX input SW 3.
20	MSW 2	I	Mechanical deck MATRIX input SW 2.
21	MSW 1	I	Mechanical deck MATRIX input SW 1.
22	MSW 0	I	Mechanical deck MATRIX input SW 0.
23, 24		O	Not used.
25	$\overline{\text{VIDEO CS}}$	O	Serial data communication chip select signal to the video IC. V-cycle "Low" pulse.
26–30		O	Not used.
31	TLQ 1	O	Not used.
32	TLQ 2	O	Not used.
33	PCM PB	O	Not used.
34	VOICE BOOST	I	Not used.
35	INSEL 2	O	Fixed at "Low".
36	INSEL 1	O	
37	AF REC	O	Not used.
38	TOP/END LED	O	ON/OFF signal for TAPE TOP/END LED.
39	MP	I	Connected to GND.
40	$\overline{\text{COSMO RESET}}$	I	Reset signal. "Low" to reset.
41	VSS	I	GND
42	X'TAL	I	} 16MHz clock oscillation circuit.
43	X'TAL	I	
44	$\overline{\text{COSMO CS}}$	I	Clip select signal from the mode control microcomputer. V-cycle "Low" pulse.
45	SI BUS	I	Serial data input.

Pin No.	Signal	I/O	Function
46	SQ BUS	O	Serial data output.
47	$\overline{\text{SCK}}$	O	Serial clock output.
48	ME/$\overline{\text{MP}}$	O	ME/MP select signal output. "Low" when MP Tape is used.
49	MPHG/$\overline{\text{MP}}$	O	Not used.
50	Hi8 DET	I	Video Hi8 discrimination signal input.
51	AFM MODE DET	I	Audio multiplex discrimination input.
52	A VSS	–	GND
53	AVREF	I	Analog board reference voltage. Connceted to +5V.
54	AVDD	I	Analog board power (+5V).
55	$\overline{\text{S SW 1}}$	I	S terminal switch detection input. "Low" for S termian input.
56	N. C.	–	Not used.
57	SP/$\overline{\text{LP}}$ DET	I	SP/LP discrimination input when CUE, REVIEW, FF and REW. "Low" for LP.
58	CORREH	I	Fixed at "High".
59	TOP SENS	I	Tape top sensing signal. This is normally "Low" and switches to "High" pulse input at tape top.
60	END SENS	I	Tape end sensing signal. This is normally "Low" and switches to "High" pulse input at tape end.
61	ATF ERROR	I	ATF error, ATF lock error input.
62	TH	O	Not used.
63	ORC	O	Not used.
64	S REEL FG	I	S reel FG signal input.
65	CLOG DET	I	This determines whether playback RF is present or not. "Low" under normal condition.
66	V SYNC	I	Composite sync signal separated form record/playback Y signal.
67	T REEL FG	I	T reel FG signal input.
68	DRUM PG	I	Durm PG signal input. Used for the drum phase servo. 40msec periodic "High" pulse.
69	DRUM FG	I	Drum FG signal input. Used for the drum speed servo. 3.3msec periodic pulse.
70	CAPSTAN FG	I	Capstan FG signal input. For the capstan speed servo.
71	V MUTE	O	Video mute signal.
72	AFM MUTE	O	Audio mute signal.
73	$\overline{\text{FE WE}}$	O	Not used.
74	DRUM RVS	O	Drum rotational direction control signal. Normally "Low".
75	CAP PWM	O	Capstan error signal output. 16 μsec PWM signal.
76	DRUM PWM	O	Drum error signal output. 16 μsec PMM signal.
77	HMS CAP FG	I	Capstan FG signal input. Used tape counter.
78	CLOCK OUT	O	Clock output for ATF.
79	C SI 2	I	Not used.
80	C SO 2	O	Serial data for the video IC.
81	C SCK 2	O	Serial comunication timing reference signal for the video IC.
82	AFM OUTSEL	O	AFM output select signal. (Note 1)
83	AFM MODE	O	"High" for STOP/REC. "M" (Hi8) for PB.
84	AUDIO PB	O	REC/PB select signal for the audio circuit. "High" for PB mode.

7-4. MODE CONTROL MICRO COMPUTER MB89091PFV-G-104 (VS-121 BOARD IC500) PORT FUNCTION DESCRIPTION

Pin No.	Signal	I/O	Function
1	TEST MODE 1	I	Connected to GND.
2	TEST MODE 2	I	Connected to GND.
3	X0		System clock (10MHz).
4	X1		System clock (10MHz).
5	VSS	I	Connected to GND.
6	$\overline{\text{RESET}}$	I	Reset input.
7	PAL/$\overline{\text{NT}}$	I	PAL/NTSC select. "High" for PAL.
8	J/$\overline{\text{UC}}$	I	J/UC select. "High" for PAL.
9	PB. REC/$\overline{\text{PB}}$	I	PB. REC/PB selected "High" for REC/PB.
10	Hi8/$\overline{\text{Normal}}$	I	Hi8/Normal 8 selected "High" for Hi8.
11-14	———	I	Not used. Fixed at "Low".
15	———	I	Not used. Fixed at "Low".
16	INT V	I	V synchronization signal input.
17	LANC POWER CONT	O	No connected.
18	$\overline{\text{LANC POWER ON}}$	I	Not used. Fixed at "High".
19-22	N.C.	I	Connected to GND.
23	C-IN LED	O	CASSETTE-IN LED lighting up on "Low".
24	REW LED	O	REW LED lighting up on "Low".
25	FF LED	O	FF LED lighting up on "Low".
26	———	I	Connected to VCC.
27	———	I	Not used. Fixed at "Low".
28	SP DATA	O	No connected.
29	SP CLK	O	No connected.
30	$\overline{\text{SIRCS IN}}$	I	SIRCS input.
31	SP STR	O	No connected.
32	SP OE	O	No connected.
33	PB LED	O	PB LED lighting up on "High".
34	REC LED	O	REC LED lighting up on "High".
35	Hi-8 LED	O	Hi-8 LED lighting up on "High".
36	PAUSE LED	O	PAUSE LED lighting up on "High".
37	FAST-REW LED	O	Not used.
38	SYNCHRO LED	O	Not used.
39-46	———	I	Not used. Fixed at "Low".
47	VCC	I	+5V power.
48-55	S0-S7	O	Not used.
56	VSS	-	GND
57-64	S8-S15	O	Not used.
65-68	V3-V0	I	Not used.
69-71	C0-C2	O	Not used.
72	———	-	No connected.
73	———	-	No connected.
74	$\overline{\text{COSMO CS}}$	O	Chip select signal to the MECHA-COM (VS-121 board IC602).
75	TT SI	I	Serial date input.
76	TT SO	O	Serial date output.

Pin No.	Signal	I/O	Function
85	REF PILOT	O	Reference pilot signal for the ATF servo. Four frequencies are selectively switched from one to another as synchronized with the rotation of the drum. $f_1 = 101.02$kHz, $f_2 = 117.19$kHz, $f_3 = 162.76$kHz, $f_4 = 146.45$kHz.
86	X'TAL	I	11.718kHz clock oscillation circuit.
87	X'TAL	I	11.718kHz clock oscillation circuit.
88	VSS	-	GND
89	VDD	I	+5V power.
90	VDD	I	+5V power.
91	CAP ON	O	Capstan driver ON/OFF control signal. "High" to turn capstan ON.
92	CAP FWD/RVS	O	Capstan rotation direction control signal. "High" for FWD. "Low" for RVS.
93	$\overline{\text{DRUM ACCEL}}$	O	Drum acceleration pulse.
94	DRUM BRAKE	O	Durm deceleration pulse.
95	CAM LOAD	O	Cam motor control signal. "High" for loading.
96	CAM UNLOAD	O	Cam motor control signal. "High" for unloading.
97	MEMO ON	O	Not used.
98	VA PB MODE	O	REC/PB select signal for the video circuit. "High" for PB mode.
99	RF SWP	O	RF switching pulse signal. 25Hz, 50% duty pulse.
100	FE RA	O	Not used.

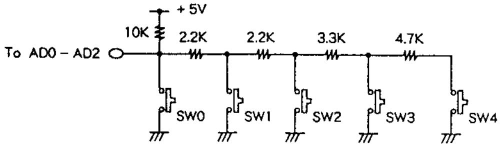
Note 1: AFM OUT SEL

AFM mode	Audio monitor	Poret output
Stereo	Stereo	L
	L ch	H
	R ch	M (Hi-Z)
Bilingual	Main	H
	Sub	M (Hi-Z)
	Main/Sub	L
Monaural	-	H

Pin No.	Signal	I/O	Function
77	$\overline{\text{TT SCK}}$	O	Serial date send clock.
78	$\overline{\text{COSMO RST}}$	O	Reset signal to the MECHA-COM (VS-121 board IC602).
79	———	–	No connected.
80	———	–	No connected.
81	AVSS	–	Analog GND.
82	AD0	I	KEY input 0.
83	AD1	I	KEY input 1.
84	AD2	I	KEY input 2.
85	AD3	I	KEY input 3.
86	AD4	I	Not used.
87	LANC S/M (AD5)	I	LANC M/S select input. Fixed at "Low".
88	AD6	I	Remote commander mode input. Fixed at "High".
89	RF SW POSI 1	I	RF SWP position adjustment VR1 input.
90	AVCC	–	Analog power.
91	RF SW POSI 2	I	RF SWP position adjustment VR2 input.
92	×2 ON	O	No connected.
93	TV/VTR	O	No connected.
94	POWER ON	O	Power control signal. "H" when power is on.
95	LANC IN	I	LANC DATA input.
96	LANC OUT	O	LANC DATA output.
97	N.C.	–	No connected.
98	VCC	–	+5V power.
99	———	–	No connected.
100	———	–	No connected.

- A/D PORT ALLOCATION

- The A/D ports are allocated as shown below.



AD \ SW	Pin No.	SW0 0.01 [V]	SW1 0.9 [V]	SW2 1.5 [V]	SW3 2.2 [V]	SW4 2.8 [V]	NO INPUT 5.0 [V]
AD0	82	POWER	EJECT	STOP	PLAY	—	—
AD1	83	FF	REC	—	—	—	—
AD2	84	REW	PAUSE	—	HI-SPEED REW	—	—

- KEY input signals pass through the A/D ports as shown above.

SECTION 8
ADJUSTMENTS

8-1. MECHANICAL ADJUSTMENTS

For Mechanical Adjustments

For the procedures how to adjust and check the mechanism, as well as how to replace mechanical parts, refer to the separate "8 mm Video Mechanical Adjustment Manual V F Mechanism" (9-973-445-11).
However, for the procedures how to set the Track Shift mode, refer to the following text.

1-1. TAPE PATH ADJUSTMENT

〔TRACK SHIFT〕
The 8 mm Video Tape Recorder system uses the AFT (Automatic Track Finding) function in which four different pilot signals are used for controlling the tape speed instantaneously to provide high precision tracking. This eliminates the Tracking Adjustment control, thus allowing accurate tracing.
In spite of its advantageous feature, the AFT system may have a difficulty in adjusting the tape pass system. The ATF will automatically corrects tracing even if the head has only a little tracing distortion. This may make it impossible to perform a complete adjustment.
Therefore, when performing a fine adjustment for tracking, the Track Shift mode should be entered before starting this adjustment. This mode will force to operate the ATF to shift the amount of tracking by a given quantity (approximately 1/4), so that tracking can be easily fine adjusted. Furthermore, no track shift jig is needed.

1-1-1. Setting the Track Shift Mode

1) Place the adjustment remote control RM-95 (J-6082-053-B) in the HOLD ON position.
2) Operate the EDIT +/– button to select adjustment page 4.
3) Operate the FF/REW button to select adjustment address 00.
4) Operate the PB/STOP button to set to adjustment data 02.
5) Operate the FF/REW button to select adjustment address 01.
6) Operate the PB/STOP button to set to adjustment data 01. (This will go to the Test Mode 1 (Pass Adjustment).)

Note 1: For details of the Test Mode, refer to "SECTION 8. SERVICE MODE."

Note 2: After adjustment, operate the PB/STOP button to reset to adjustment data 00. Place the remote control in the HOLD OFF position to return to the normal mode.

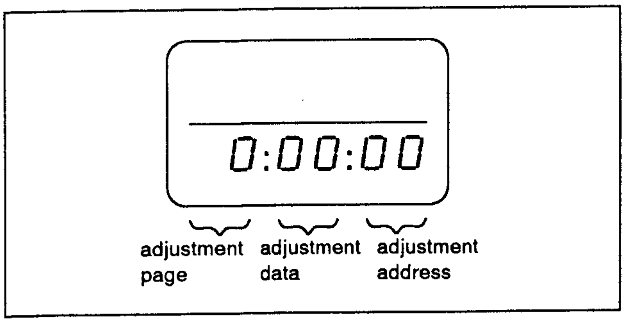


Fig. 8-1-1.

1-1-2. Preparation before Adjustment

1) Clean the surfaces over which tape moves past (of the tape guides, drum, capstan shaft and pinch rollers).
2) Oscilloscope Connection and Waveform Output:
   1 ch: Drum head's RF signal output, RP-190 board CN802 pin ③ (PB Y)
   External trigger input: RP-190 board CN802 pin ② (RF SWP)
   GND: RP-190 board CN802 pin ① (GND)
3) Play back alignment tape for tracking (WR5-1CP).
4) Check the RF waveform observed on the oscilloscope is flat on both entrance and exit sides.
   If not flat, perform necessary adjustment according to the separate "8 mm Video Mechanical Adjustment Manual V (F Mechanism)".

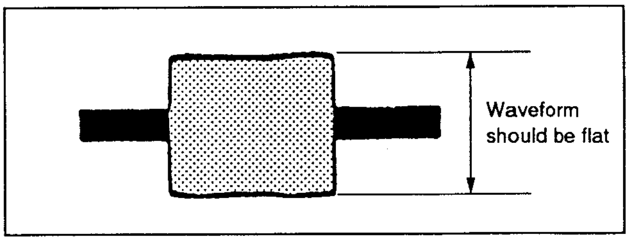


Fig. 8-1-2.

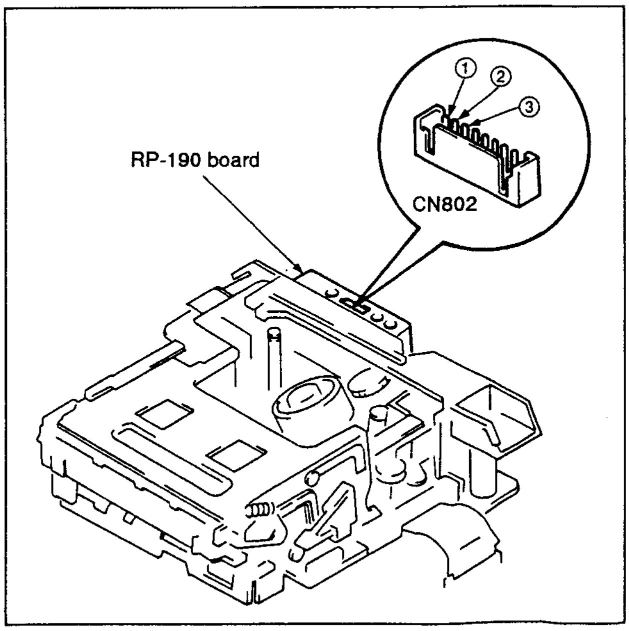


Fig. 8-1-3.

8-2. ELECTRICAL ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 8–24.

2-1. PREPARATIONS BEFORE ADJUSTMENTS

2-1-1. Equipment Used

Use the following measuring instruments for the adjustments of this unit.

1) TV Monitor
2) Oscilloscope 2 phenomena, band 30 MHz or wider, with delay mode (Use 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator
   (With a video output terminal. Refer to "2-1-2. Connecting the Equipment".)
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Alignment tape
    - For adjusting tracking (WR5-1CP)
      Part No.: 8-967-995-07
    - For adjusting video frequency characteristics (WR5-7CE)
      Part No.: 8-967-995-18
    - For checking standard 8 mm mode operations
      For SP (WR5-5CSP)
      Part No.: 8-967-995-47
      Or (WR5-4CSP)
      Part No.: 8-967-995-46
      For LP (WR5-4CL)
      Part No.: 8-967-995-56
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8CSE)
      Part No.: 8-967-995-48
      For LP (WR5-8CLE)
      Part No.: 8-967-995-57
    - For checking AFM stereo operations (WR5-9CS)
      Part No.: 8-967-995-28
11) Adjusting remote commander (J-6082-053-B)

2-1-2. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 8-2-1 according to the input terminal specifications (S VIDEO or VIDEO), and perform the adjustments.

The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications. However, the S video input terminal will have the priority. When adjusting with the video input terminal input, disconnect the connector from the S video input terminal.

Note 1: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

Note 2: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.

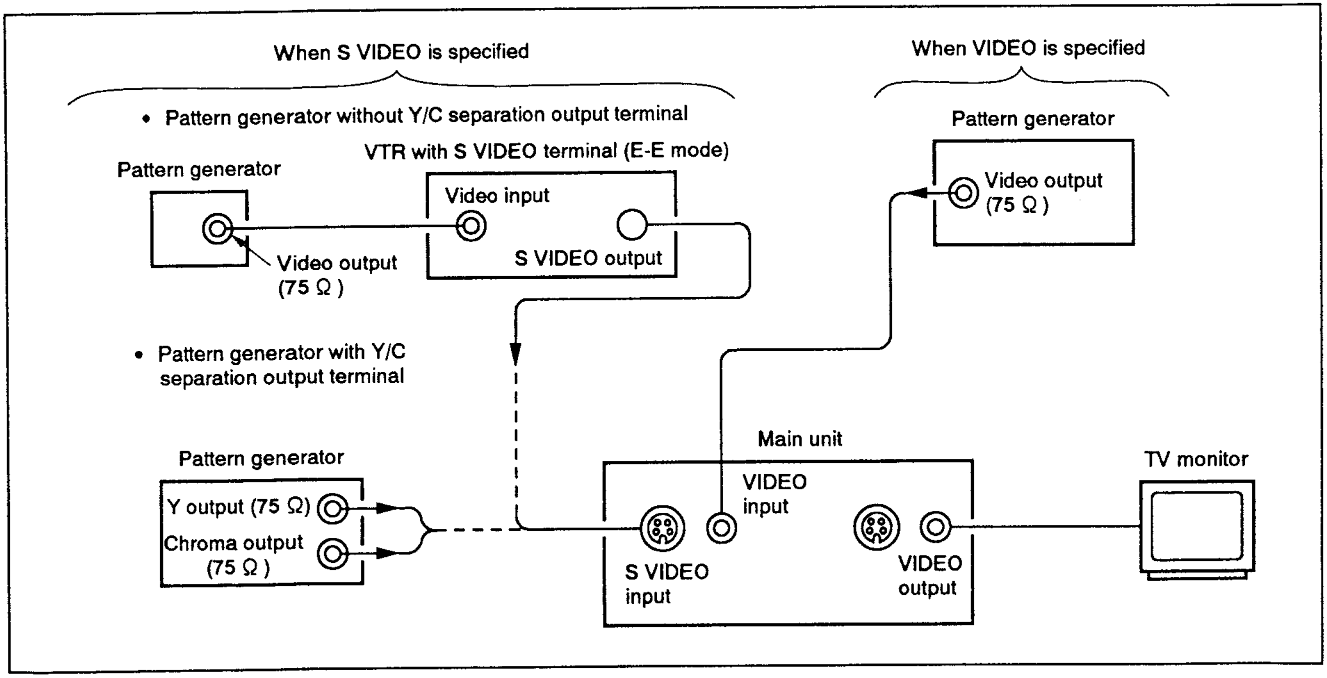

When S VIDEO is specified
• Pattern generator without Y/C separation output terminal
Pattern generator
VTR with S VIDEO terminal (E-E mode)
Video input
S VIDEO output
Video output (75 Ω)
• Pattern generator with Y/C separation output terminal
Pattern generator
Y output (75 Ω)
Chroma output (75 Ω)
When VIDEO is specified
Pattern generator
Video output (75 Ω)
Main unit
VIDEO input
S VIDEO input
VIDEO output
TV monitor

Fig. 8-2-1.

2-1-3. Checking the Input Signals

As the video signal obtained from the pattern generator is used as the adjusting signal for adjusting this unit, this video output signal must be within the given specifications.

1. For S VIDEO Input

Connect the oscilloscope to the Y signal terminal of the S video IN terminal, and check that the sync signal of the Y signal is approximately 0.3 Vp-p and that the amplitude of the video section is approximately 0.7 Vp-p. (When the VTR with a S video output terminal is used, check that the chroma signal and burst signal have not remained as well.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal, and check that the burst signal amplitude of the chroma signal is approximately 0.3 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30: 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 8-2-2.

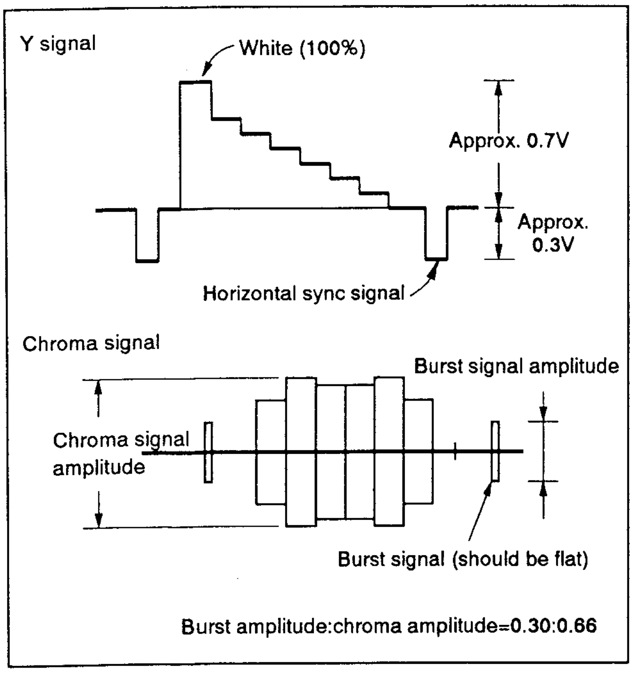

Y signal
White (100%)
Approx. 0.7V
Approx. 0.3V
Horizontal sync signal
Chroma signal
Burst signal amplitude
Chroma signal amplitude
Burst signal (should be flat)
Burst amplitude:chroma amplitude=0.30:0.66

Fig. 8-2-2. Color Bar Signal of the Pattern Generator

2. For VIDEO Input

Connect the oscilloscope to the video input terminal, and check that the amplitude of the sync signal of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66.

The video signal (color bar) used for electric adjustments of the VTR section is shown in Fig. 8-2-3.

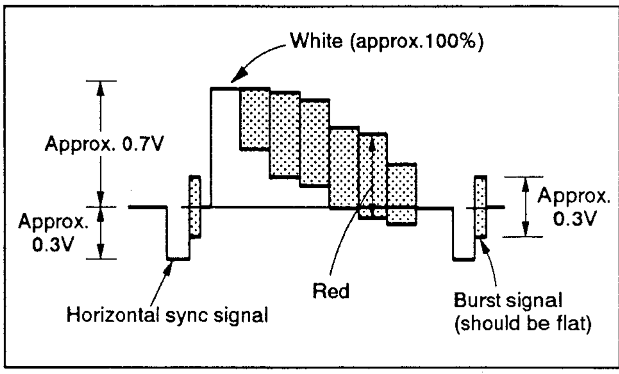

White (approx.100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

Fig. 8-2-3. Color Bar Signal of the Pattern Generator

2-1-4. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

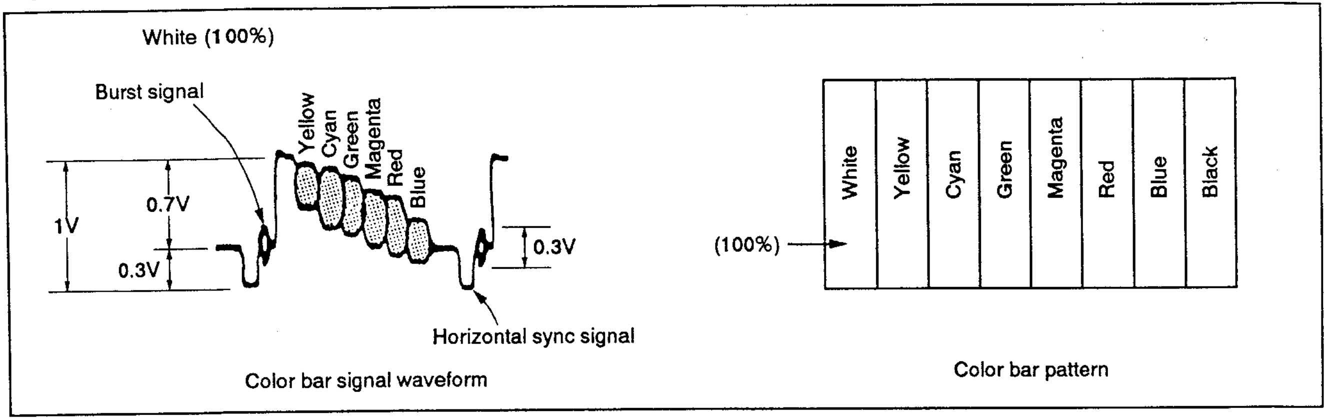
Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	Standard 8 mm	MP	SP	CH2: Signal for 1 MHz tape path adjustment Marker for switching position adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7CE	Hi8	ME	LP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-4CSP or WR5-5CSP	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8CSE	Hi8	ME	SP		• Audio signal (PCM) 400 Hz	
Operation check WR5-4CL	Standard 8 mm	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8CLE	Hi8	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9CS	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) MAIN: 400 Hz (1.5 MHz ± 60 kHz DEV) SUB: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations

Tape type
MP············ Particle type metal tape
ME············ Evaporated type metal tape

Table 8-2-1.

Fig. 8-2-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measured at VIDEO OUT terminal (75Ω termination).


White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
1V
0.7V
0.3V
0.3V
Horizontal sync signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Fig. 8-2-4. Alignment tape color bar signal

2-1-5. Input/Output Level and Impedance

Video input	Pin jack Input signal: 1 Vp-p, 75Ω unbalance, sync negative
Video output	Pin jack Output signal: 1 Vp-p, 75Ω unbalance, sync negative
S Video input	4-pin mini DIN Luminance signal: 1 Vp-p, 75Ω unbalance, sync negative Color signal: 0.3 Vp-p, 75Ω unbalance
S Video output	4-pin mini DIN Luminance signal: 1 Vp-p, 75Ω unbalance, sync negative Color signal: 0.3 Vp-p, 75Ω unbalance
Audio input	Pin jack Input level: -7.5 dBs (0dBs=0.775 Vrms) Input unbalance: Above 47 kΩ
Audio output	Pin jack Specified output: -7.5 dBs Output unbalance: Below 10 kΩ

2-2. SERVICE MODE

☆ This unit uses the EVR (Electronic Variable Resistor) for performing adjustments and test. These functions are implemented by the SENSER LANC system.

1. Senser Lanc

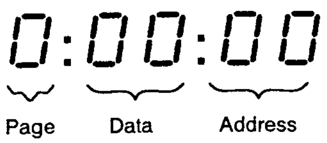
SENSER LANC is the LANC format designed to perform EVR (electronic variable resistor) adjustments and various tests for this 8 mm VTR by using the LANC (Control L). The SENSER LANC is synonymous with the old SERVICE LANC. But there have been enhancements and the SENSER LANC is now used as a unified word.

2. How to use the RM-95 Jig (Adjustment Remote Control)

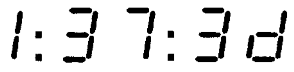
The RM-95 jig is used to operate the SENSER LANC. This jig will create the SENSER LANC Mode. Because of this, the HOLD switch has been modified for service purpose.
Note that the old models of the RM-95 have no page display function and it is needed to replace their microcomputers within these old models.

Old	UPD7503G-A71-12 UPD7503G-C23-12	8-759-142-56 8-759-146-77	No Page display (The microcomputer must be replaced.)
New	UPD7503G-C56-12	8-759-148-35	Page display

LCD Display of RM-95

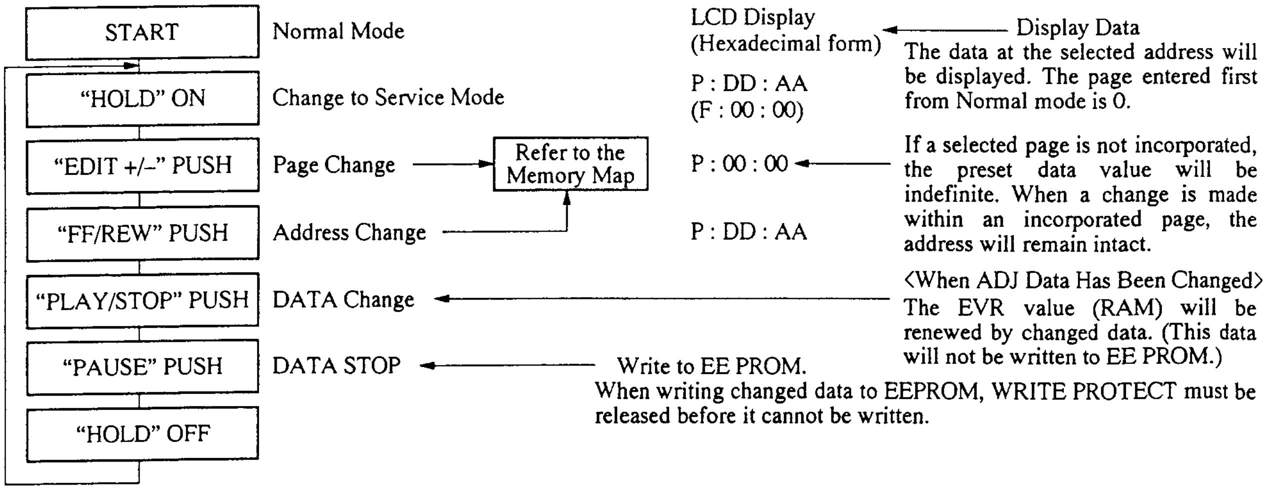

0:00:00
Page
Data
Address

Example



This means that the data on page 1, address 3D is 37.

3. How to Change the Service Mode with RM-95


START
Normal Mode
"HOLD" ON
Change to Service Mode
"EDIT +/–" PUSH
Page Change
Refer to the Memory Map
"FF/REW" PUSH
Address Change
"PLAY/STOP" PUSH
DATA Change
"PAUSE" PUSH
DATA STOP
Write to EE PROM.
"HOLD" OFF
LCD Display (Hexadecimal form)
P : DD : AA
(F : 00 : 00)
P : 00 : 00
P : DD : AA
Display Data

The data at the selected address will be displayed. The page entered first from Normal mode is 0.

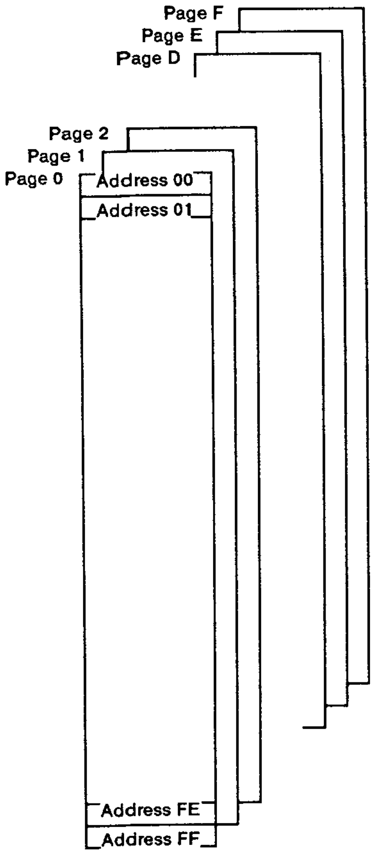
If a selected page is not incorporated, the preset data value will be indefinite. When a change is made within an incorporated page, the address will remain intact.

<When ADJ Data Has Been Changed> The EVR value (RAM) will be renewed by changed data. (This data will not be written to EE PROM.)

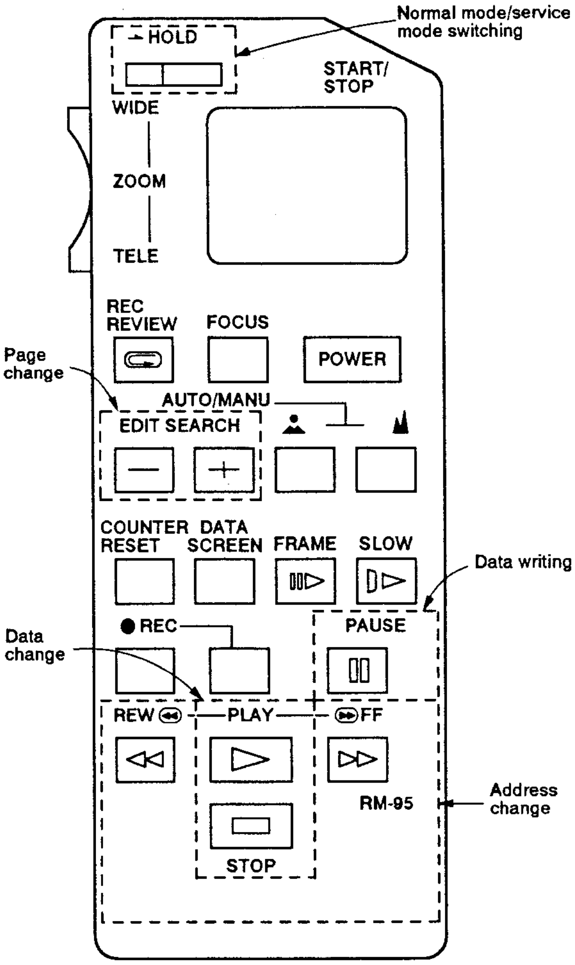
When writing changed data to EEPROM, WRITE PROTECT must be released before it cannot be written.

Command	Action	RM-95 Control Button Pushed
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Writes data to EEPROM, RAM	Pause

SENSER LANC Memory Map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Adjusting remote commander RM-95 (J-6082-053-B)


HOLD
Normal mode/service mode switching
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page change
AUTO/MANU
EDIT SEARCH
—
+
COUNTER RESET
DATA SCREEN
FRAME
SLOW
Data writing
● REC
PAUSE
Data change
REW
PLAY
FF
RM-95
Address change
STOP

This unit has page 0 to F allocated as listed below.

PAGE	Page Allocation
0	Service
1	
2	System Controler
3	System Controler
4	System Controler
5	
6	
7	Timer/Tuner Controler
8	
9	
A	
B	
C	
D	
E	
F	

Note 1: This set has no EE-PROM built-in and so it has no “D page”.

5. Test Mode Setting

Variety of test modes are established and changed as listed below.

Page 4	Address 02

Data	Function
00	Normal
01	Test mode 1 SP/LP Automatic Discrimination Inhibit
02	Test mode 2 Various Emergencies, Inhibit and Release Drum, Capstan, Loading Motor, Reel, Tape top and Tape end

※ Before setting test mode, set data 02 to page 4, address 00.

※ After compleating necessary adjustments/repairs, be sure to return the data at address 02 to 00.

6. Adjustment Mode Setting

Variety of adjustment modes are established and changed as listed below.

Page 4	Address 01

Data	Function
00	Normal
01	Tape Path Adjustment Mode (Track shift playback mode)
04	Chroma Emphasis Adjustment Mode

※ Before setting adjustment mode, set data 02 to page 4, address 00.

※ After compleating necessary adjustments/repairs, be sure to return the data at address 01 to 00.

2-3. POWER SUPPLY CHECK

2-3-1. Output Voltage Check (Power Supply Block)

Mode	POWER OFF (STANDBY)
Measuring Instrument	Digital voltmeter
UN13.5V check	
Measurement Point	Pin ① of CN201
Specified Value	13.5 ± 0.5 Vdc
UN6.0V check	
Measurement Point	Pin ④ of CN201
Specified Value	6.0 ± 0.1 Vdc

Checking Method:

1) Check that each power supply voltage satisfies its specification.

2-3-2. Power Supply Block RV201 Adjusting Method

- Set up conditions that a 800 mA current is output from UN6.0V and a 150 mA current is output from UN13.5V.
- Adjust RV201 so that the UN6.0V voltage becomes 5.9V.

2-4. SYSTEM CONTROL SYSTEM ADJUSTMENTS

2-4-1. Clock Check (VS-121 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ④ of IC500
Measuring Instrument	Frequency counter
Specified Value	10000 ± 100 kHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Checking Method:

1) Check that the clock is 10000 ± 100 kHz.

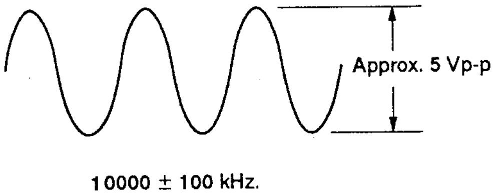


Fig. 8-2-5.

2-5. SERVO SYSTEM ADJUSTMENTS

〔Adjusting Procedure〕

1. PWM frequency check
2. Switching position adjustment
3. CAP DUTY adjustment

2-5-1. PWM Frequency Check (VS-121 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑦ of IC607
Measuring Instrument	Frequency counter
Specified Value	480 ± 50 kHz

Checking Method:

1) Check that the frequency is 480 ± 50 kHz.

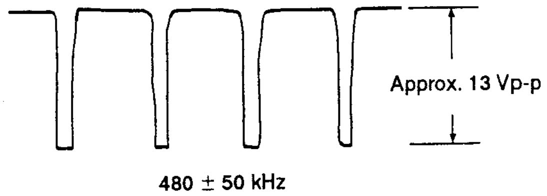


Fig. 8-2-6.

2-5-2. Switching Position Adjustment (VS-121 Board)

<Purpose> To set the switching timing of the video head. If the timing is incorrect, switching noises and jitters will be produced on the played back image.

Mode	Playback
Signal	Alignment tape: For adjusting tracking (WR5-1CP)
Measurement Point	CH1: Pin ② of CN802 of the RP-190 board (RF SWP) CH2: Pin ③ of CN802 of the RP-190 board (PB RF)
Measuring Instrument	Oscilloscope
Adjusting Element	RV500, RV501 of VS-121 board
Specified Value	t=0 ± 10 μsec

Adjusting Method:

1) Connect the adjusting remote commander RM-95 (J-6082-053-B) to J500 of the VS-121 board.
2) Set the adjusting remote commander to HOLD ON.
3) Set to page 7 using the EDIT SEARCH +/– button.
4) Set to address 80 using the FF/REW button.
5) Set to data 05 using the PLAY/STOP button. (Setting of the switching position adjustment mode.)
6) Set to page 0 using the EDIT SEARCH +/– button,
7) Set to address 04 using the FF/REW button.
8) Rotate RV500 and adjust to t=0 ± 255 μsec. (The data of address 04 should be from "04" to "12".)
9) Set to address 03 using the FF/REW button.
10) Rotate RV501 and adjust to t=0 ± 10 μsec.
11) Set to page 0 using the EDIT SEARCH +/– button.
12) Set to address 00 using the FF/REW button.
13) Set to data 00 using the PLAY/STOP button.

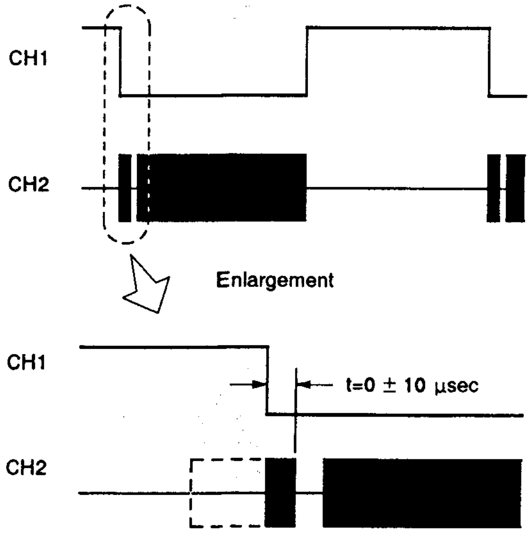


Fig. 8-2-7.

2-5-3. CAP DUTY Adjustment (VS-121 Board)

<Purpose> To stabilize the servo on LP mode. (Both edge of leading and trailing of CAP FG signal are detected on LP ode.)

Mode	Play
Signal	Alignment tape: For checking operations on LP mode (WR5-4CL)
Measurement Point	CN603 ② pin (CAP ERROR)
Measuring Instrument	Oscilloscope
Adjusting Element	RV601
Specified Value	Minimum amplitude (A)

Adjusting Method:

1) Playback the tape and let the amplitude (A) be minimum.

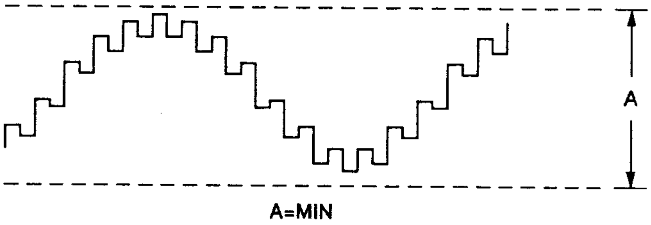


Fig. 8-2-8.

2-6. VIDEO ADJUSTMENTS

The color video signal supplied from the pattern generator is used as the video input signal for video system adjustments performed in the recording mode. Check that the signals satisfy the specifications in Fig. 8-2-2, Fig. 8-2-3, and "Input Signal Check".
Perform the adjustments in the following order.

[**Order of Adjustments**]

1) Playback frequency characteristics adjustment
2) EE level adjustment
3) Comb filter adjustment
4) Emphasis input Y level adjustment
5) Standard 8 mm mode Y FM carrier frequency adjustment
6) Standard 8 mm mode Y FM deviation adjustment
7) Hi8 mode Y FM carrier frequency adjustment
8) Hi8 mode Y FM deviation adjustment
9) Chroma emphasis adjustment
10) VIDEO input Y level adjustment
11) Playback CCD input level adjustment
12) Hi8 mode playback Y level adjustment
13) Standard 8 mm mode playback Y level adjustment
14) REC Y level adjustment

Note: Normally, to perform REC chroma emphasis adjustment (RV114) is not necessary. And do not touch this adjusting element.

2-6-1. Playback Frequency Characteristics Adjustment (RP-190 Board)

<Purpose> To set the RF output of the head to the optimum frequency. If the frequency used is incorrect, the played back image will not be clear or pulse noises will be produced.

Note: [ ] contains the adjusting element of CH2.

Mode	Playback
Signal	Alignment tape: For adjusting frequency characteristics (WR5-7CE)
Measurement Point	Pin ③ of CN802 (PB Y) External trigger: Pin ② of CN802 (RF SWP) Trigger strobe: + [–]
Measuring Instrument	Oscilloscope
Adjusting Element	RV801 [RV802]
Specified Value	4.5 MHz level: 8.5 MHz level=3.0 : 2.2 ± 0.2

Adjusting Method:

1) Adjust the 4.5 MHz and 8.5 MHz level ratio of the PB RF output waveform to 3.0 : 2.2 ± 0.2 using RV801 [RV802].

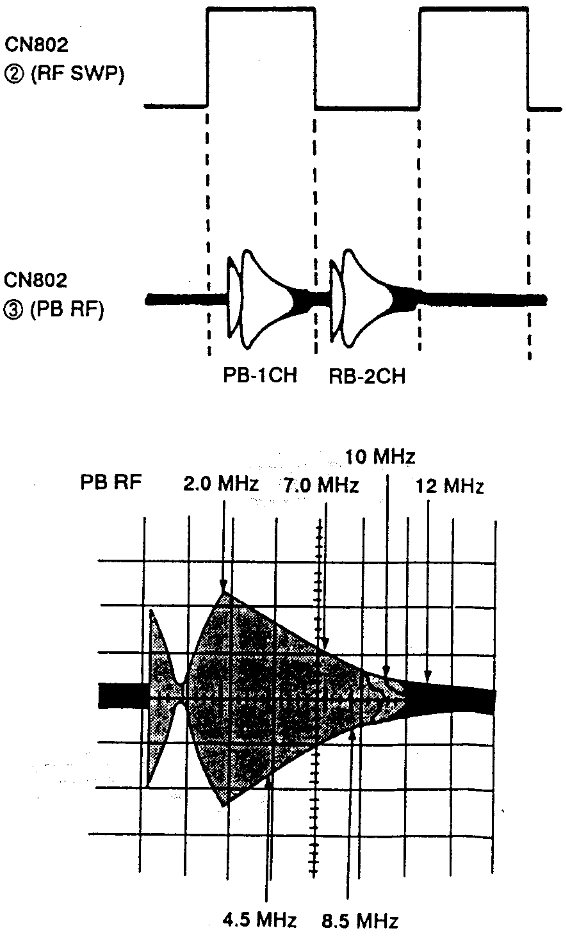


Fig. 8-2-9.

2-6-2. E-E Level Adjustment (VS-121 Board)

<Purpose> Set the E-E/Record Y signal level. If the level is incorrect, the E-E and the record/playback pictures will be bright or dark too much. And the correct color will not be reprocuded.

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑦ of CN900 (LINE OUT Y (X))
Measuring Instrument	Oscilloscope
Adjusting Element	RV101
Specified Value	1.00 ± 0.05 Vp-p

Note: Terminate the Y signal terminal of the S VIDEO OUT terminal at 75 Ω.

Adjusting Method:

1) Insert a ME type cassette tape.
2) Adjust to 1.00 ± 0.05 Vp-p using RV101.

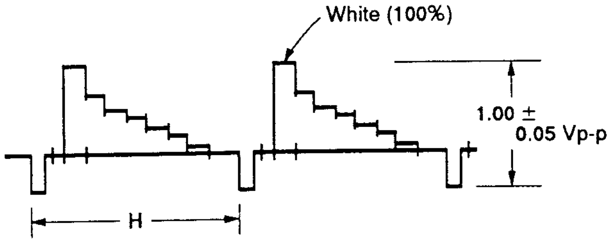


Fig. 8-2-10.

2-6-3. Comb Filter Adjustment (VS-121 Board)

<Purpose> To adjust the comb filter using the composite video signal to eliminate the crosstalk components of the playback chroma signal. The beat produced on the played back image will be great if the level is incorrect.

Mode	E-E
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑭ of IC104 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV102, RV108
Specified Value	Minimum residual chroma component. (Below 30 mVp-p)

Adjusting Method:

1) Check that any plug is not inserted to the S VIDEO input terminal.
2) Adjust RV102 and RV108 alternately so that the residual chroma component becomes minimum. (Below 30 mVp-p)

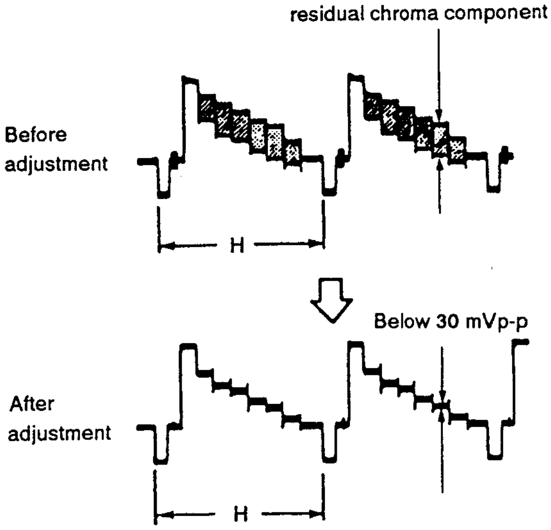


Fig. 8-2-11.

2-6-4. Emphasis Y Input Level Adjustment (VS-121 Board)

<Purpose> To set the Y input level of the emphasis circuit. If the level is incorrect, the played back image will be too bright or too dark.

Mode	E-E
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑤ of IC104 (EMPH IN) or Pin ⑦ of IC107
Measuring Instrument	Oscilloscope
Adjusting Element	RV109
Specified Value	500 ± 20 mVp-p

Adjusting Method:

1) Adjust to 500 ± 20 mVp-p using RV109.

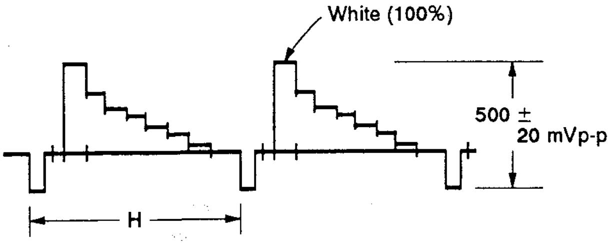


Fig. 8-2-12.

2-6-5. Standard 8 mm Mode Y FM Carrier Frequency Adjustment (VS-121 Board)

<Purpose> Standard 8 mm mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	E-E
Signal	No signal
Measurement Point	Pin ③ of CN606 (REC RF (X))
Measuring Instrument	Frequency counter, oscilloscope
Adjusting Element	RV106
Specified Value	4.38 ± 0.05 MHz

Note: Connect the frequency counter via high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Adjusting method:

1) Insert a Standard 8 mm MP type cassette tape.
2) Adjust RV106 so that the Y FM carrier frequency becomes the specified value.

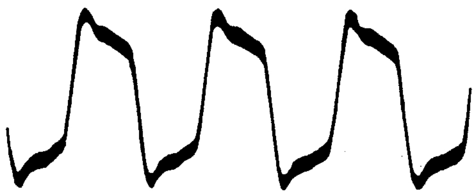


Fig. 8-2-13.

2-6-6. Standard 8 mm Mode Y FM Deviation Adjustment (VS-121 Board)

<Purpose> Standard 8 mm mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑦ of CN900 (LINE OUT (X))
Measuring Instrument	Oscilloscope
Adjusting Element	RV107
Specified Value	A=1.00 ± 0.05 Vp-p

Note 1: Check that "2-6-13. Standard 8 mm mode playback level adjustment" have been completed.

Note 2: Terminate the Y signal terminal of the S VIDEO OUT terminal at 75Ω .

Adjusting method:

1) Insert a Standard 8 mm MP type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification: A=1.00 ± 0.05 Vp-p
5) If the specification is not satisfied, adjust RV107, and repeat steps 2) to 4).

Playback signal level	Turning direction of RV107
When smaller than the specified value	Clockwise (↻)
When bigger than the specified value	Counter clockwise (↺)

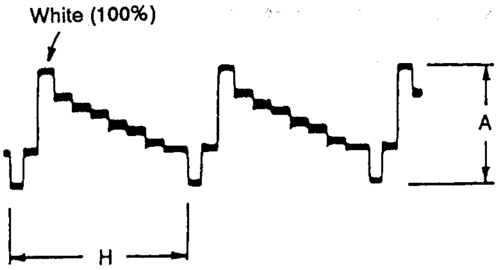


Fig. 8-2-14.

2-6-7. Hi8 Mode Y FM Carrier Frequency Adjustment (VS-121 Board)

<Purpose> Hi8 mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	E-E
Signal	Non signal
Measurement Point	Pin ③ of CN606 (REC RF (X))
Measuring Instrument	Frequency counter, oscilloscope
Adjusting Element	RV104
Specified Value	5.96 ± 0.05 MHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Adjusting method:

1) Insert a ME type cassette tape.
2) Adjust RV104 so that the Y FM carrier frequency becomes the specified value.

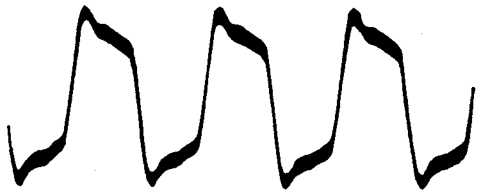


Fig. 8-2-15.

2-6-8. Hi8 Mode Y FM Deviation Adjustment (VS-121 Board)

<Purpose> Hi8 mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑦ of CN900 (LINE OUT Y (X))
Measuring Instrument	Oscilloscope
Adjusting Element	RV105
Specified Value	A=1.00 ± 0.05 Vp-p

Note 1: Check that "2-6-12. Hi8 mode playback level adjustment" have been completed.

Note 2: Terminate the Y signal terminal of the S VIDEO OUT terminal at 75Ω .

Adjusting method:

1) Insert a ME type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification: A=1.00 ± 0.05 Vp-p
5) If the specification is not satisfied, adjust RV105, and repeat steps 2) to 4).

Playback signal level	Turning direction of RV105
When smaller than the specified value	Clockwise (↻)
When bigger than the specified value	Counter clockwise (↺)

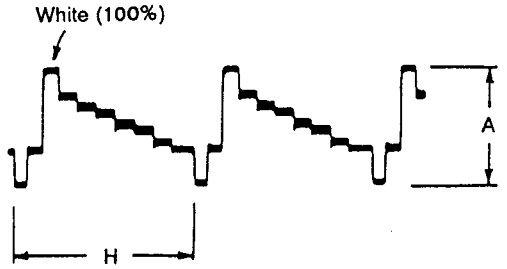


Fig. 8-2-16.

2-6-9. Chroma Emphasis Adjustment (VS-121 Board)

<Purpose> To set the center frequency of the emphasis. If the frequency is incorrect, the color will change.

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑧ of IC104 (B.EMPH OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV103
Specified Value	Minimum fo components

Adjusting Method:

1) Insert a ME type cassette tape.
2) Connect the adjusting remote commander RM-95 (J-6082-053-B) to J500 of the VS-121 board.
3) Set the HOLD switch of the adjusting remote commander to ON position.
4) Set to page 4 using the EDIT SEARCH +/– button.
5) Set to address 00 using the FF/REW button.
6) Set to data 02 using the PLAY/STOP button.
7) Set to address 01 using the FF/REW button.
8) Set to data 04 using the PLAY/STOP button.
9) Minimize the amplitude of the latter section of the yellow part of the chroma signal using RV103.
10) Set to address 01 using the FF/REW button.
11) Set to data 00 using the PLAY/STOP button.
12) Set the HOLD switch of the adjusting remote commander to OFF position.

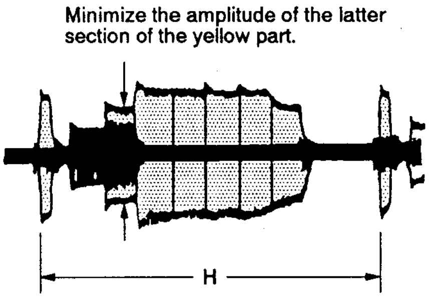

Minimize the amplitude of the latter section of the yellow part.
H

Fig. 8-2-17.

2-6-10. VIDEO Input Y Level Adjustment (VS-121 Board)

<Purpose> To set the E-E Y signal level of VIDEO input (Video terminal input). If the level is incorrect, the E-E image of VIDEO input will be too bright or too dark.

Mode	E-E
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑦ of CN900 (LINE OUT Y (X))
Measuring Instrument	Oscilloscope
Adjusting Element	RV401
Specified Value	A=1.00 ± 0.05 Vp-p

Note: Terminate the Y signal terminal of the S VIDEO OUT terminal at 75Ω .

Adjusting method:

1) Adjust RV401 so that the Y signal level becomes 1.00 ± 0.05 Vp-p.

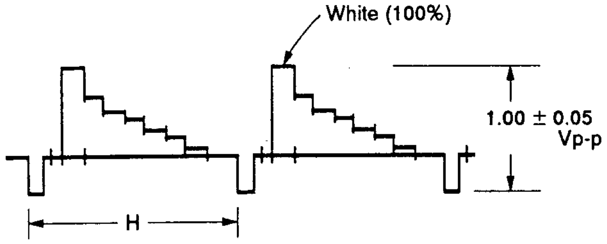


Fig. 8-2-18.

2-6-11. Playback CCD Input Level Adjustment (VS-121 Board)

<Purpose> To set the de-emphasize input level. If the level is incorrect, the image will be too bright or dark.

Mode	Playback
Signal	Alignment tape: Color bar section for checking operations (WR5-8CSE)
Measurement Point	Pin ⑰ of IC104 or pin ① of IC106
Measuring Instrument	Oscilloscope
Adjusting Element	RV111
Specified Value	0.5 ± 0.02 Vp-p

Adjusting Method:

1) Adjust to 0.5 ± 0.02 Vp-p using RV111.

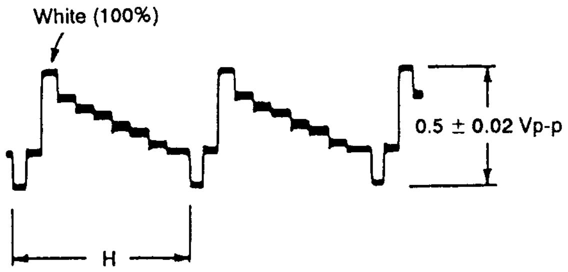


Fig. 8-2-19.

2-6-12. Hi8 Mode Playback Y Level Adjustment (VS-121 Board)

<Purpose> To set the luminance level in Hi8 playback.
If the level is incorrect, the Hi8 image will be too bright or dark.

Mode	Playback
Signal	Alignment tape: Color bar section for checking operations (WR5-8CSE)
Measurement Point	Pin ⑦ of CN900 (LINE OUT Y(X))
Measuring Instrument	Oscilloscope
Adjusting Element	RV110
Specified Value	1.00 ± 0.02 Vp-p

Note: Terminate the Y signal terminal of the S VIDEO OUT terminal at 75 Ω.

Adjusting Method:

1) Adjust to 1.00 ± 0.02 Vp-p using RV110.

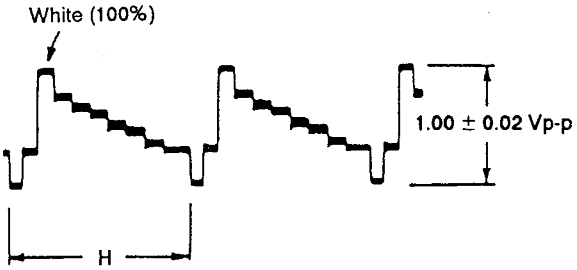


Fig. 8-2-20.

2-6-13. Standard 8 mm Mode Playback Y Level Adjustment (VS-121 Board)

<Purpose> To set the luminance level in normal playback.
If the level is incorrect, the normal image will be too bright or dark.

Mode	Playback
Signal	Alignment tape: Color bar section for checking operations (WR5-5CSP)
Measurement Point	Pin ⑦ of CN900 (LINE OUT Y(X))
Measuring Instrument	Oscilloscope
Adjusting Element	RV112
Specified Value	1.00 ± 0.02 Vp-p

Note: Terminate the Y signal terminal of the S VIDEO OUT terminal at 75 Ω.

Adjusting Method:

1) Adjust to 1.00 ± 0.02 Vp-p using RV112.

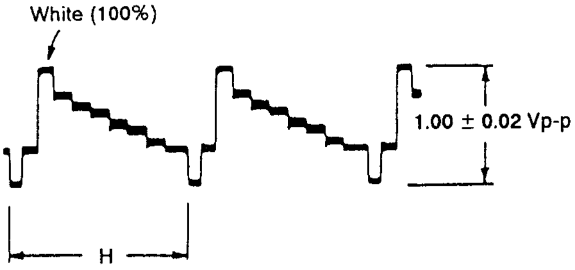


Fig. 8-2-21.

2-6-14. REC Y Level Adjustment (VS-121 Board)

<Purpose> Recording level of luminance signal setting.
If deviated, this causes black strech over modulation noise or color shade.

Mode	Record
Signal	No signal
Measurement Point	Pin ③ of CN606 (REC RF (X))
Measuring Instrument	Oscilloscope (Band width limit: 20 MHz)
Adjusting Element	RV113
Specified Value	500 ± 10 mVp-p

Note: Set the band width limit of the oscilloscope to 20 MHz.

Adjusting Method:

1) Insert a ME type cassette tape.
2) Record no signal.
3) Adjust to 500 ± 10 mVp-p with RV113.

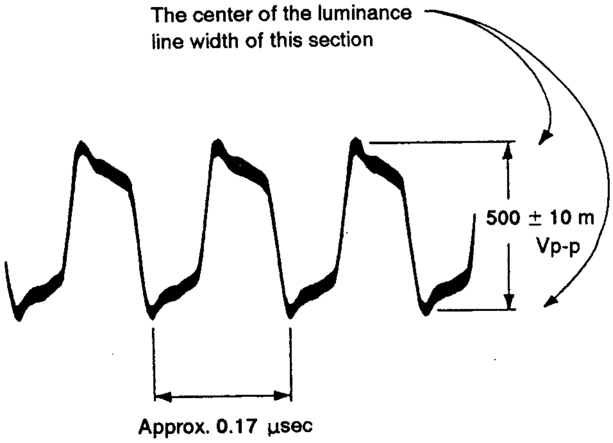

The center of the luminance line width of this section
500 ± 10 m Vp-p
Approx. 0.17 µsec

Fig. 8-2-22.

2-7. AFM AUDIO SYSTEM ADJUSTMENTS

Perform the following adjustments using the color bar signal as the video signal input.

[Connection of Audio Measuring Equipment]

Connect the audio system measuring equipment as shown in the figure below, apart from the video system measuring equipment.

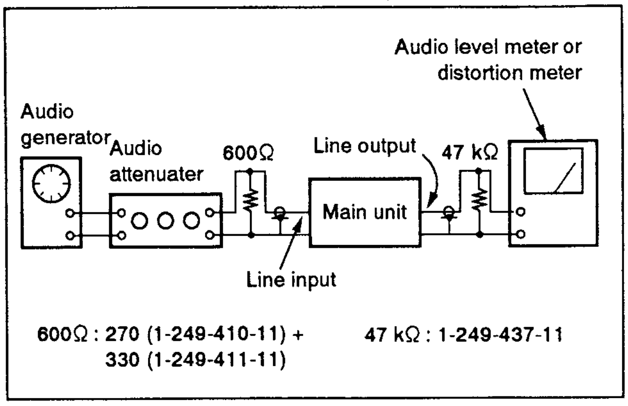

Audio level meter or distortion meter
Audio generator
Audio attenuater
600Ω
Line output
47 kΩ
Main unit
Line input
600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)
47 kΩ : 1-249-437-11

Fig. 8-2-23.

Perform the adjustments in the following order.

[Order of Adjustments]

1) Carrier frequency 1.5 MHz check
2) Carrier frequency 1.7 MHz check
3) 1.5 MHz deviation adjustment
4) 1.7 MHz deviation check
5) Playback separation 2 adjustment
6) Playback separation 1 check
7) E-E output level check
8) Overall frequency characteristics check
9) Overall distortion check
10) Overall noise level check

2-7-1. Carrier Frequency 1.5 MHz Check (VS-121 Board)

Mode	Record
Signal	No signal
Measurement Point	Pin (79) of IC901 (VCO OUT)
Measuring Instrument	Frequency counter
Specified Value	1500 ± 3 kHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc).

Checking Method:

1) Check that the frequency is 1500 ± 3 kHz.

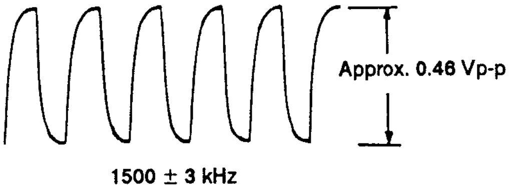


Fig. 8-2-24.

2-7-2. Carrier Frequency 1.7 MHz Check (VS-121 Board)

Mode	Record
Signal	No signal
Measurement Point	Pin (62) of IC901 (VCO OUT)
Measuring Instrument	Frequency counter
Specified Value	1700 ± 3 kHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc).

Checking Method:

1) Check that the frequency is 1700 ± 3 kHz.

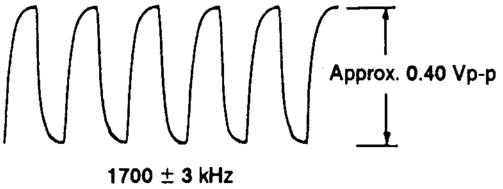


Fig. 8-2-25.

2-7-3. 1.5 MHz Deviation Adjustment (VS-121 Board)

<Purpose> To adjust the deviation. If there is deviation, signals from the alignment tape will not separate properly (when the stereo signal is used).

Mode	Playback
Signal	Alignment tape: Bilingual section for checking operations (WR5-9CS)
Measurement Point	Left audio line output terminal
Measuring Instrument	Audio level meter
Adjusting Element	RV901
Specified Value	–7.5 ± 3.0 dBs

Checking Method:

1) Set the audio output to main or sub using the audio monitor button of the remote commander (with the 400 Hz signal output from the left channel and the 1 kHz signal output from the right channel).
2) Adjust the 400 Hz signal level to –7.5 ± 3.0 dBs using RV901.

2-7-4. 1.7 MHz Deviation Check (VS-121 Board)

<Purpose> To adjust the deviation. If there is deviation, signals from the alignment tape will not separate properly (when the stereo signal is used).

Mode	Playback
Signal	Alignment tape: Bilingual section for checking operations (WR5-9CS)
Measurement Point	Right audio line output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3.0 dBs

Checking Method:

1) Set the audio output to main or sub using the audio monitor button of the remote commander (with the 400 Hz signal output from the left channel and the 1 kHz signal output from the right channel).
2) Check that the 1 kHz signal level is –7.5 ± 3.0 dBs.

2-7-5. Playback Separation 2 Adjustment (VS-121 Board)

Mode	Playback
Signal	Alignment tape: Stereo section for checking operations (WR5-9CS)
Measurement Point	Right audio line output terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV901
Specified Value	Minimum 400 Hz components (Below –35 dBs (below 40 mVp-p))

Adjusting Method:

1) Adjust the crosstalk components (400 Hz) of the right channel to minimum (below –35 dBs (below 40 mVp-p)) using RV901.

2-7-6. Playback Separation 1 Check (VS-121 Board)

Mode	Playback
Signal	Alignment tape: Stereo section for checking operations (WR5-9CS)
Measurement Point	Left audio line output terminal
Measuring Instrument	Oscilloscope
Specified Value	1 kHz components (Below –35 dBs (below 40 mVp-p))

Checking Method:

1) Check that the crosstalk components (1 kHz) of the left channel is below –35 dBs (below 40 mVp-p).

2-7-7. E-E Output Level Check (VS-121 Board)

Mode	E-E
Signal	400 Hz, –7.5 dBs Audio line input terminal left and right
Measurement Point	Left and right audio line output terminals
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3.0 dBs

Checking Method:

1) Check that the levels of the left and right audio line output terminals are –7.5 ± 3.0 dBs.

2-7-8. Overall Frequency Characteristics Check (VS-121 Board)

Mode	Self-recording and playback
Signal	Ⓐ: 400 Hz, –7.5 dBs Ⓑ: 20 Hz, –7.5 dBs Ⓒ: 14 kHz, –7.5 dBs Left and right audio line input terminals
Measurement Point	Left and right audio line output terminals
Measuring Instrument	Audio level mter
Specified Value	When the 400 Hz playback output level is specified as 0 dB, the playback output levels of 20 Hz and 14 kHz become both 0 ± 3.0 dB.

Checking Method:

1) Record the signal of Ⓐ to Ⓒ in sequence.
2) Playback the recorded section.
3) Be sure that when the 400 Hz playback output level is specified as 0 dB, the playback output levels of 20 Hz and 14 kHz become both 0 ± 3.0 dB.

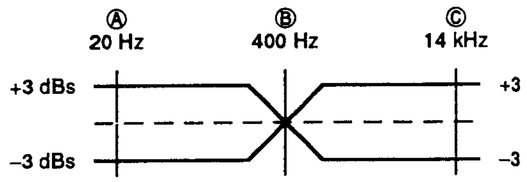


Fig. 8-2-26.

2-7-9. Overall Distortion Check (VS-121 Board)

Mode	Self-recording and playback
Signal	400 Hz, -7.5 dBs Left and right audio line input terminals
Measurement Point	Left and right audio line output terminals
Measuring Instrument	Audio distortion meter
Specified Value	Left: Less than 0.5% (note 1) Right: Less than 1.0% (note 1)

Checking Method:
1) Record the signal.
2) Playback the recorded section.
3) Be sure that the distortion of the left channel is less than 0.5% and that of the right channel is less than 1.0% (note 1).

Note 1: The value when a 200 Hz to 6 kHz BPF is used.

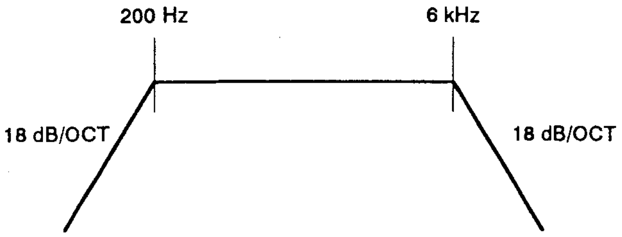


Fig. 8-2-27.

2-7-10. Overall Noise Level Check (VS-121 Board)

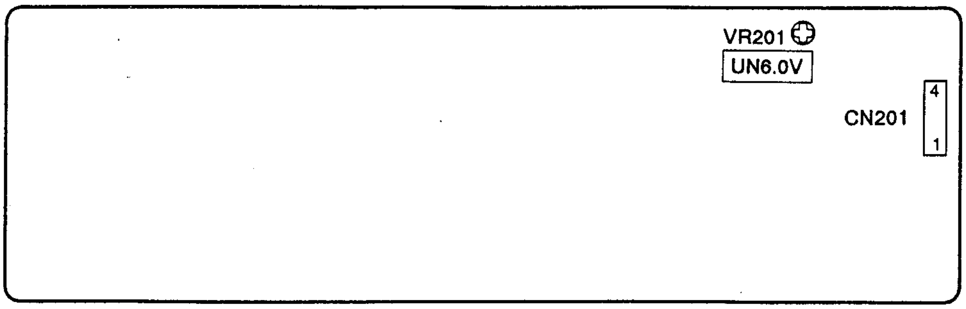
Mode	Self-recording and playback
Signal	No signal (Insert shorting plugs to the left and right audio line input terminals.)
Measurement Point	Left and right audio line output terminals
Measuring Instrument	Audio level meter
Specified Value	Left: Below -63 dBs (note 2) Right: Below -63 dBs (note 2)

Checking Method:
1) Record the signal.
2) Playback the recorded section.
3) Be sure that the noise level of left channel is below -63 dBs and that of the right channel is below -63 dBs (note 2).

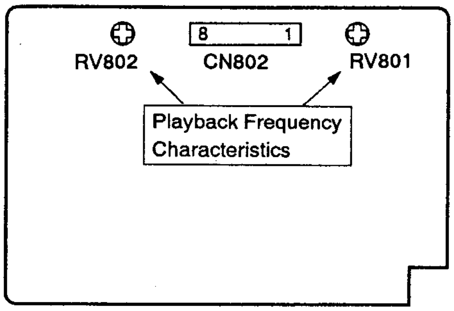
Note 2: The value when an IHF-A listening sensitivity correction filter is used.

2-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

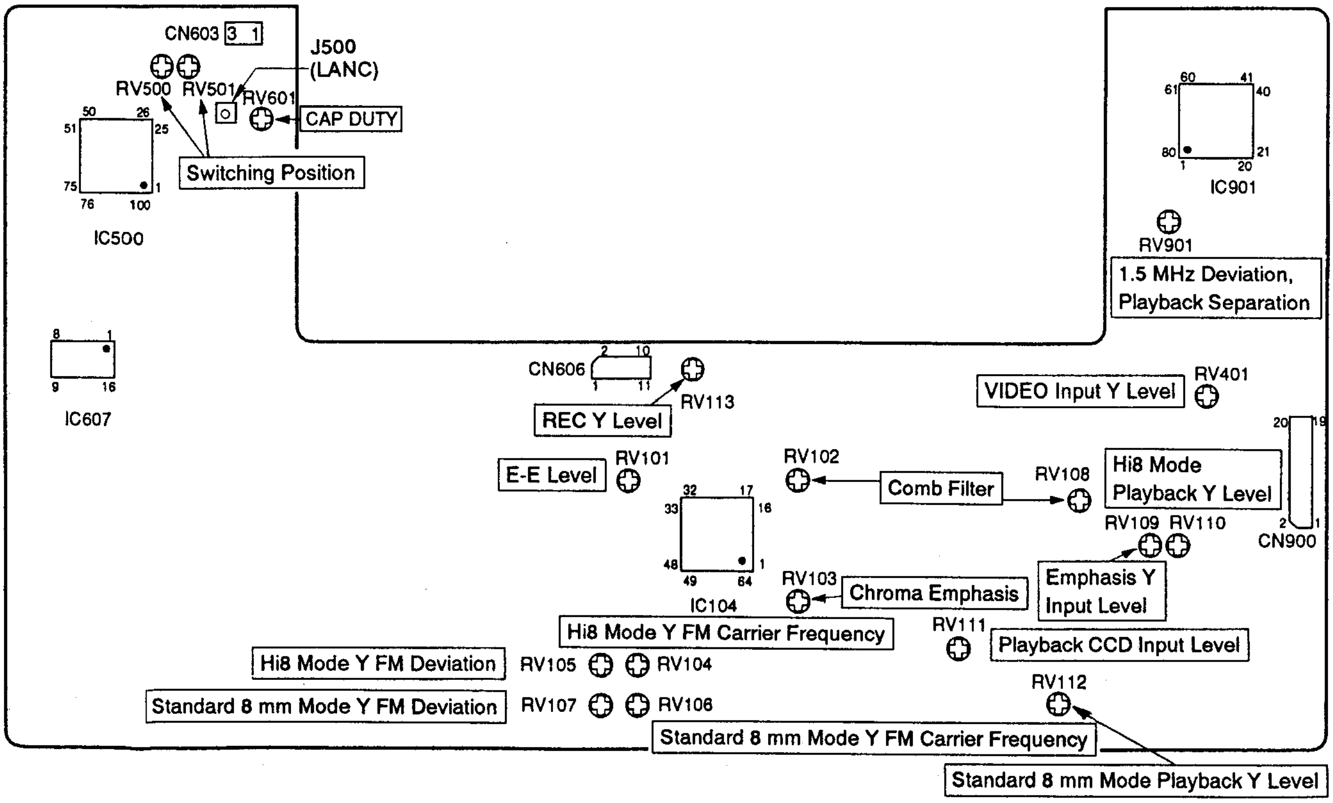
SR-655 BOARD
(POWER SUPPLY BLOCK: COMPONENT SIDE)


VR201
UN6.0V
CN201
4
1

RP-190 BOARD (COMPONENT SIDE)


8
1
RV802
CN802
RV801
Playback Frequency Characteristics

VS-121 BOARD (COMPONENT SIDE)


CN603
3 1
J500
(LANC)
RV500
RV501
RV601
CAP DUTY
Switching Position
50
26
51
25
75
1
76
100
IC500
8
1
9
16
IC607
60
41
61
40
80
21
1
20
IC901
RV901
1.5 MHz Deviation, Playback Separation
CN606
2
10
1
11
RV113
REC Y Level
VIDEO Input Y Level
RV401
20
19
2
1
CN900
E-E Level
RV101
RV102
Comb Filter
RV108
Hi8 Mode Playback Y Level
RV109
RV110
32
17
33
16
48
1
49
64
IC104
RV103
Chroma Emphasis
Emphasis Y Input Level
Hi8 Mode Y FM Carrier Frequency
RV111
Playback CCD Input Level
Hi8 Mode Y FM Deviation
RV105
RV104
RV112
Standard 8 mm Mode Y FM Deviation
RV107
RV106
Standard 8 mm Mode Y FM Carrier Frequency
Standard 8 mm Mode Playback Y Level

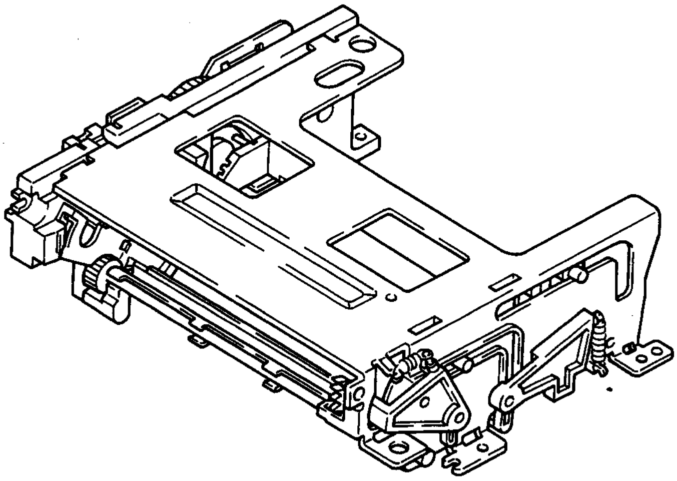
V13000

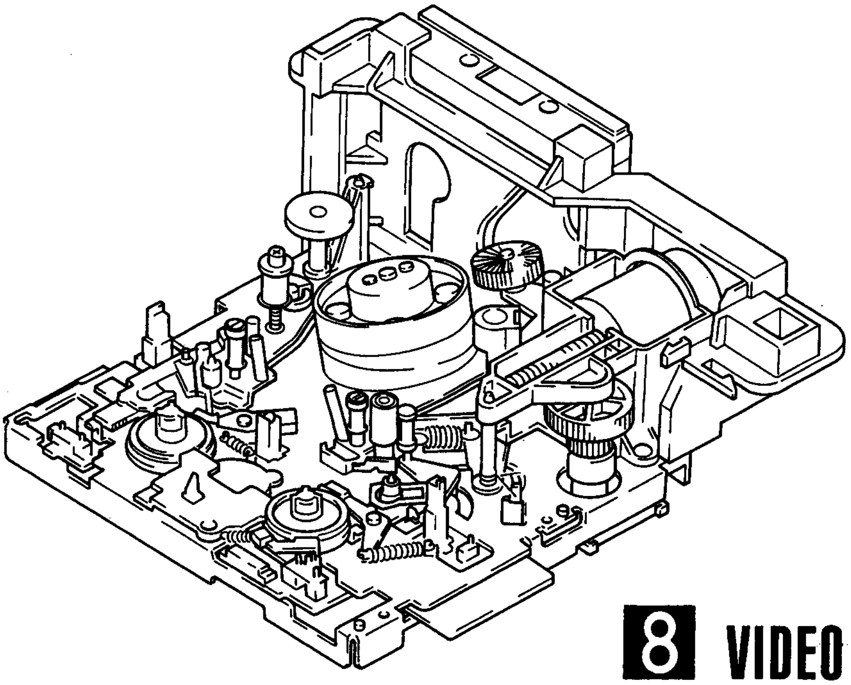
8 mm Video MECHANICAL ADJUSTMENT MANUAL V

F MECHANISM

Video 8

File with the SERVICE MANUAL





8 VIDEO RECORDER

SONY®

TABLE OF CONTENTS

Section *Title* *Page*

1. MAIN FEATURES 3

2. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT 4

2-1. FL Cassette Compartment Assembly 4
2-2. Operation with FL Cassette Compartment Assembly Removed 5
2-2-1. Activating Loading 5
2-2-2. Activating Play Status 5
2-2-3. Activating Ejection 5
2-3. Handling of Mode Selector II 6
2-3-1. General 6
2-3-2. Operation 7

3. PERIODIC CHECK AND MAINTENANCE 9

3-1. Cleaning of Rotary Drum Assembly 9
3-2. Cleanign of Tape Path 9
3-3. Periodic Check Items 10
3-4. Service Jigs List 11

4. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT 12

4-1. RP Block 12
4-2. Impedance Roller 13
4-3. HC Roller Assembly 13
4-4. Pendulum Base Assembly and Soft Brake Assembly (T) 14
4-5. Brake (S) Arm and Brake (T) Arm Assembly 15
4-6. Tension Regulator Assembly, Reel Table (S) Assembly and Reel Table (T) Assembly 16
4-7. TG2 Assembly 17
4-8. TG7 Arm Assembly 18
4-9. Cam Motor Assembly 19
4-10. Pinch Arm Assembly 20
4-11. Worm Wheel Bracket 21
4-12. Capstan Motor 22
4-13. Drum Assembly 23
4-14. Pulley Base Assembly 24
4-15. Loading Drive Lever 25
4-16. Rotary Switch and Main Cam 26
4-17. Slide Plate 27
4-18. Loading Gear (S) Assembly 28
4-19. Loading Gear (T) Assembly 29
4-20. Coaster (S) 30
4-21. Coaster (T) Assembly 30
4-22. Rotary Upper Drum Replacement 31
4-23. Adjustment of Tension Regulator Position 32
4-24. FWD Back Tension Adjustment 32
4-25. Reel Torque Check 32
4-26. FL Worm Wheel 33

5. TAPE PATH ADJUSTMENT 34

5-1. Preparation for Adjustment 35
5-2. Tracking Adjustment 36
5-3. No.2 Guide (TG2) Adjustment 36
5-3-1. No.2 Guide (TG2) Height Presetting 36
5-3-2. No.2 Guide (TG2) Adjustment 37
5-4. No.7 Guide (TG7) Adjustment 37
5-5. CUE and REV Waveform Check 37
5-6. Check After Adjustment 38
5-6-1. Tracking Check 38
5-6-2. Rising Check 38
5-6-3. Tape Path Check 38

6. EXPLODED VIEWS 39

6-1. Front Loading Assembly 39
6-2. MD Chassis Assembly (1) 40
6-3. MD Chassis Assembly (2) 41
6-4. MD Chassis Assembly (3) 42

7. DIAGRAMS 43

8. ELECTRICAL PARTS LIST 46

1. MAIN FEATURES

The mechanism developed exclusively for the 8mm video provides the following features.

1. Faster rewind time than U mechanism.
   4 times high speed. (about 1 minute in case of P120 cassette.)

2. Jog shuttle supporting by addition of forced swing mechanism.

3. High speed start on Picture mechanism.
   Stop → playback about 0.8 sec.

4. Head clogging prevention by adoption of new cleaning roller.

5. Reduction of the number of parts. (about 40 parts less than U mechanism.)

6. FL capstan motor drive.

2. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the EJECT mode. (To select the EJECT mode, refer to "2-3, Handling of Mode Selector II".)

2-1. FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 1)

1. Removal

1) Select the EJECT mode.
2) Remove three screws ① and remove the FL cassette compartment ② toward the arrow.

2. Mounting

1) Select the EJECT mode.
2) Mount the FL cassette compartment ② with its tab Ⓐ engaged with the hole Ⓑ in mechanical chassis.
3) Tighten three screws ①.

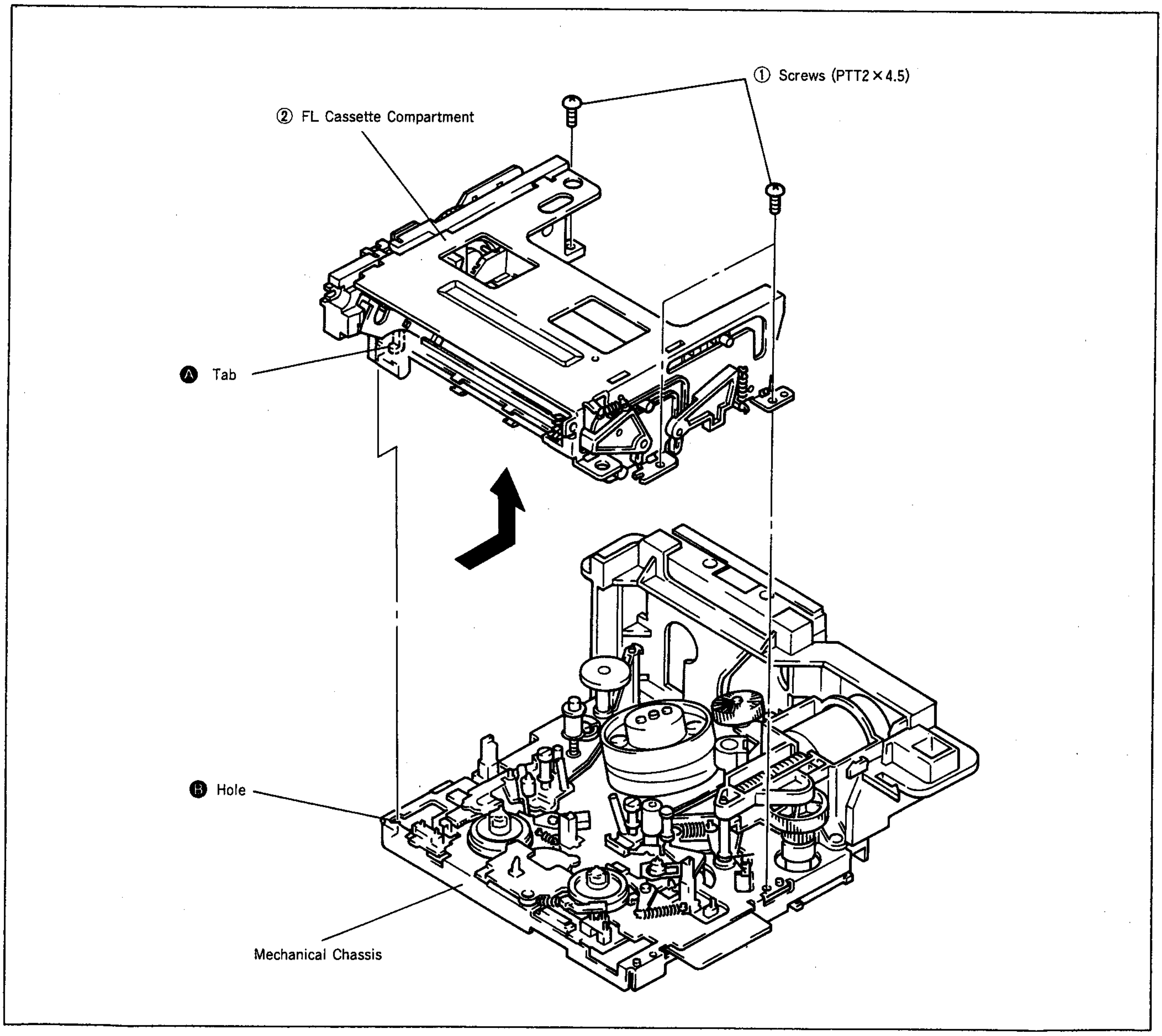

① Screws (PTT2 × 4.5)
② FL Cassette Compartment
Ⓐ Tab
Ⓑ Hole
Mechanical Chassis

Fig. 1

2-2. OPERATION WITH FL CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 2)

2-2-1. Activating Loading

1) Referring to the Service Guide, supply the power with the cabinet removed.
2) Cover the LED ① with an opaque cap ②.
3) Press the cassette down switch ③ three times.

2-2-2. Activating Play Status

1) Perform each step in 2-2-1. Activating Loading.
2) Press the PLAY button while keeping the cassette down switch pressed.

2-2-3. Activating Ejection

1) Press the EJECT button.

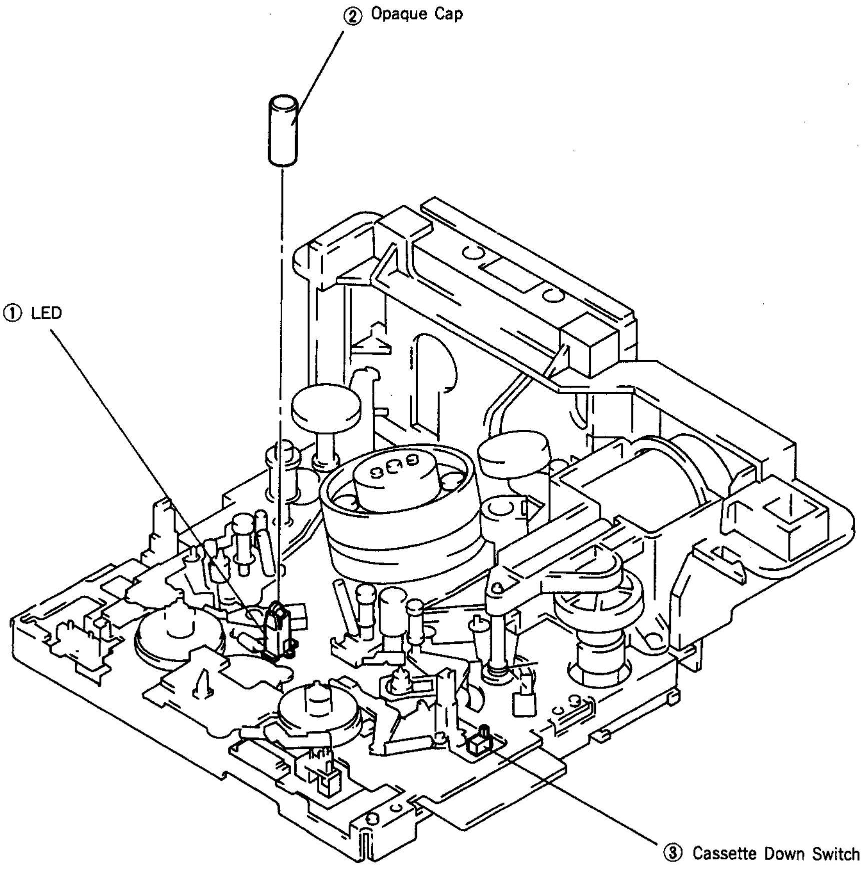


Fig. 2

2-3. HANDLING OF MODE SELECTOR Ⅱ

2-3-1. General

The mode selector is used as a mechanism drive tool to help maintenance of various mechanical decks, and it provides the following functions.

1. MANUAL test

   In this mode, the motor is driven only during the time that the switch is pressed, so that the operator can control the motor freely.

2. STEP test

   In this mode, the motor is driven from the present status attained from sensor until the status changes to another status, so that the operator can confirm every operations.

3. AUTO test

   This mode checks if the mechanism operates normally following the status change table registered to each mechanical deck through a sequence of operation in all statuses of the mechanism. If it detects a faulty status change during operation, it displays "NG" and stops operation.

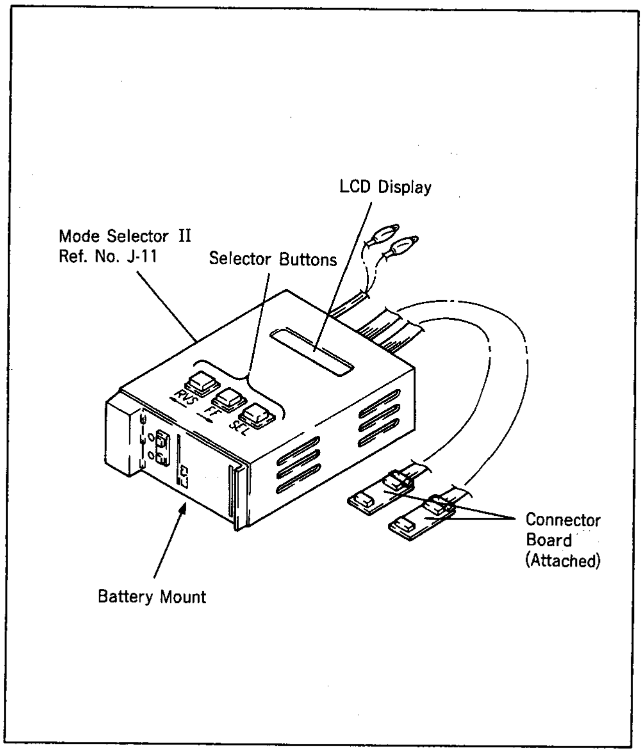

LCD Display
Mode Selector II
Ref. No. J-11
Selector Buttons
RVS
FF
SEL
Connector
Board
(Attached)
Battery Mount

Fig. 3

MODE SELECTOR Ⅱ (J-6082-282-A) CONNECTION

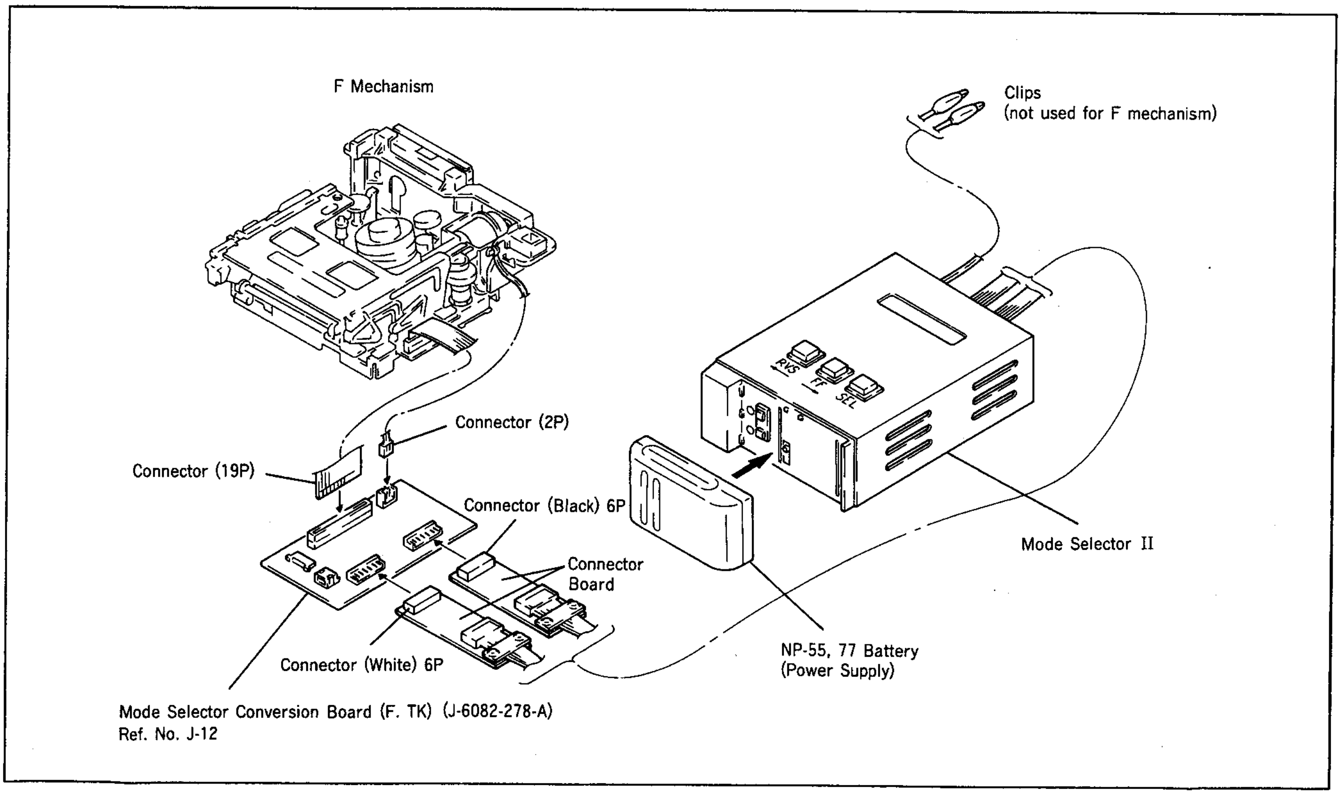
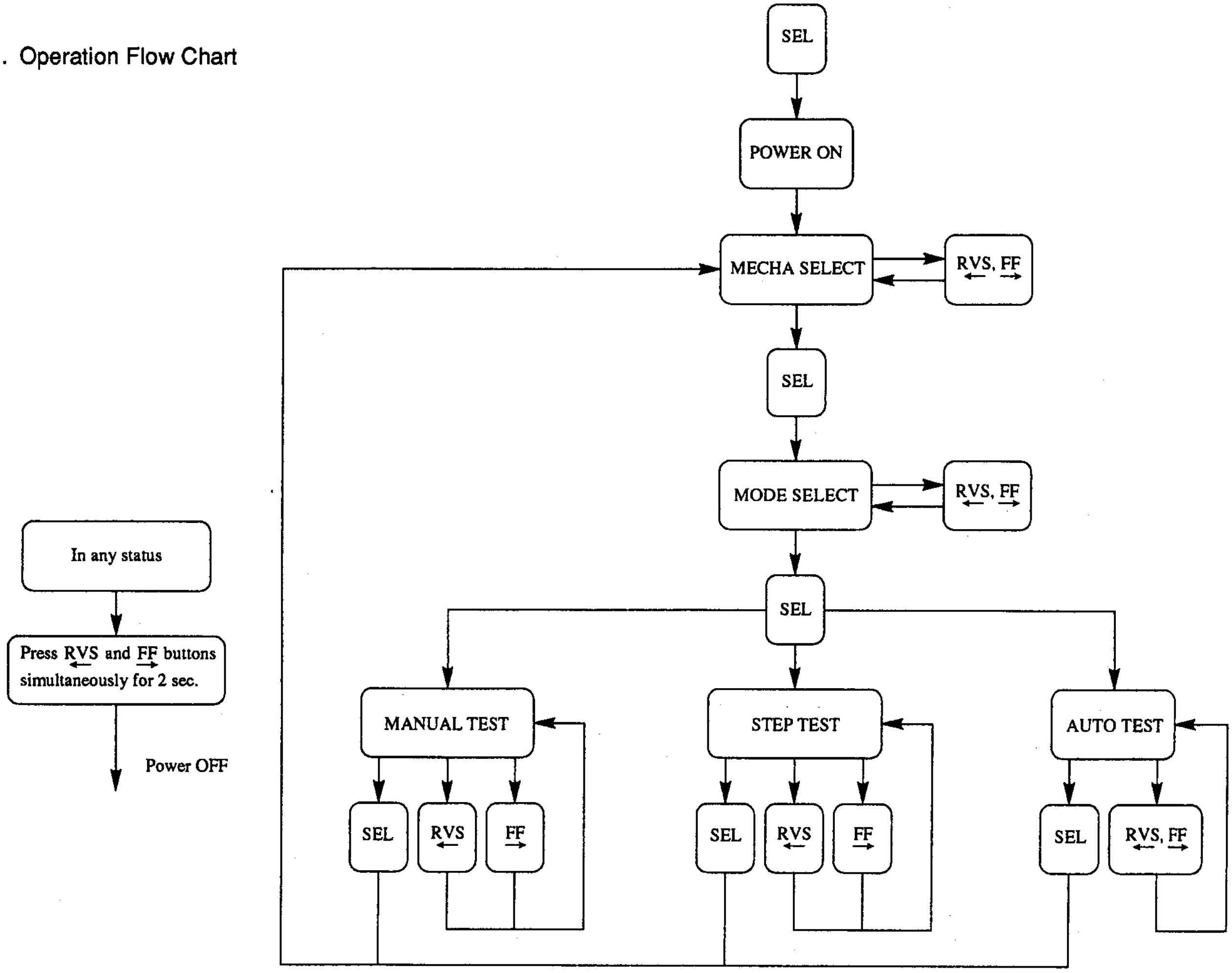

F Mechanism
Clips
(not used for F mechanism)
Connector (2P)
Connector (19P)
Connector (Black) 6P
Connector
Board
Mode Selector II
Connector (White) 6P
NP-55, 77 Battery
(Power Supply)
Mode Selector Conversion Board (F. TK) (J-6082-278-A)
Ref. No. J-12

Fig. 4

2-3-2. OPERATION

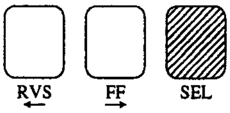
1. Operation Flow Chart


SEL
POWER ON
MECHA SELECT
RVS, FF
SEL
MODE SELECT
RVS, FF
SEL
MANUAL TEST
STEP TEST
AUTO TEST
SEL
RVS
FF
SEL
RVS
FF
SEL
RVS, FF
In any status
Press RVS and FF buttons simultaneously for 2 sec.
Power OFF

(Except K mechanism)

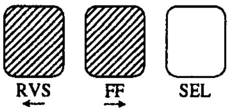
2. Mode Selector Ⅱ power ON

Press the SEL button to turn on the power supply.



3. Mode Selector Ⅱ power OFF

At the power ON, press RVS and FF buttons simultaneously for more than 2 seconds to turn off the power supply.



4. Mechanism selection

The "MECHA SELECT" is displayed on LCD immediately after the power supply is turned on. Call the desired mechanism by pressing the RVS or FF button, and press the SEL button. Thus, the mechanism has been selected. (Fig. 5-1 indicates F mechansim.)

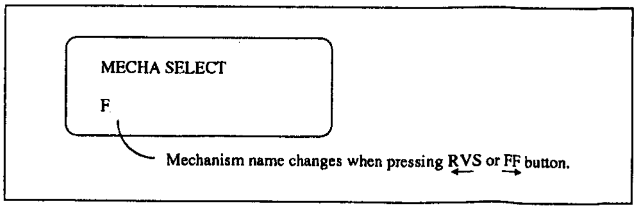

MECHA SELECT
F
Mechanism name changes when pressing RVS or FF button.

Fig. 5-1

5. Mode selection

Select the test mode "MANUAL", "STEP" or "AUTO" to be executed.
Call the desired mode by pressing the RVS or FF button, and press the SEL button. Thus, the mode has been selected.

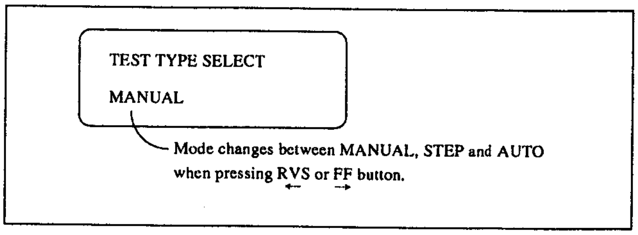

TEST TYPE SELECT
MANUAL
Mode changes between MANUAL, STEP and AUTO when pressing RVS or FF button.

Fig. 5-2

6. MANUAL test

This mode drives the motor only during the time that the RVS or FF button is pressed.

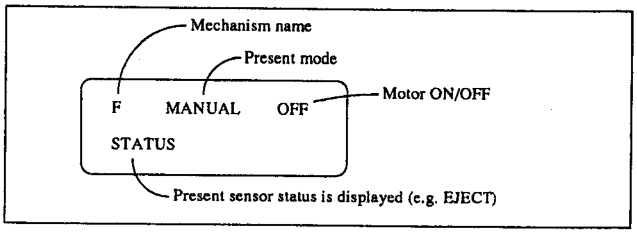

Mechanism name
Present mode
Motor ON/OFF
F
MANUAL
OFF
STATUS
Present sensor status is displayed (e.g. EJECT)

Fig. 5-3

7. STEP test

This mode drives the motor from the present status until the status changes in the direction selected with RVS or FF button.

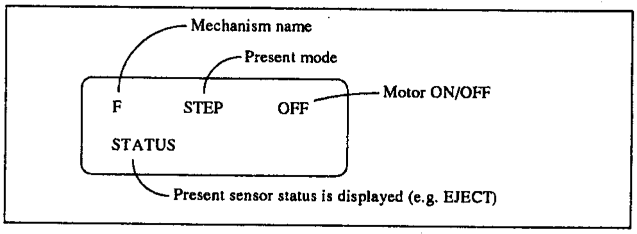

Mechanism name
Present mode
Motor ON/OFF
F
STEP
OFF
STATUS
Present sensor status is displayed (e.g. EJECT)

Fig. 5-4

8. AUTO test

This mode checks if the operation sequence stored for each mechanical deck is normal, and if the signals from sensors that execute a sequence of operation meet the stored sequence. The same operation is executed if either RVS or FF is pressed.

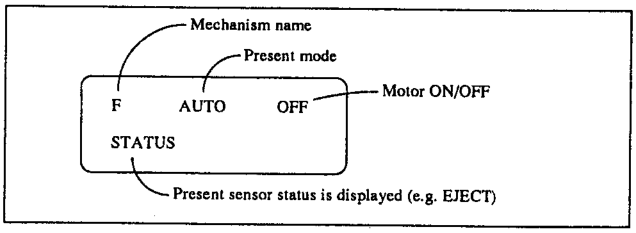

Mechanism name
Present mode
Motor ON/OFF
F
AUTO
OFF
STATUS
Present sensor status is displayed (e.g. EJECT)

Fig. 5-5

Mechanism status (position) change sequence

After selection of mechanism, if either MANUAL or STEP mode is selected and the RVS or FF button is pressed, the mechanism status (position) can be designated. (Designated status is displayed at STATUS position.)
EJECT ←→ UNLOAD END ←→ STOP 1 ←→ HIGH SPEED REW ←→ DEW ←→ LOAD END ←→ STOP 2 ←→ FWD. P ←→ RVS. P

Code \ MD name					F mechanism
A	B	C	D		
0	1	1	1	1	EJECT
0	0	1	1	2	UNLOAD END
1	0	1	0	3	STOP 1
1	0	1	1	4	HIGH SPEED REW
1	0	0	0	5	DEW
1	1	0	0	6	
1	1	1	0	7	LOADE END
0	1	1	0	8	STOP 2
0	1	0	0	9	
1	1	0	1	10	FWD. P/FWD
0	0	0	1	11	RVS. P/RVS
1	0	0	1	12	

9. Battery alarm display

In case of low voltage of battery, which is a power supply of Mode Selector, the alarm message is displayed (not synchronous display).
In such a case, no operation is available, requiring battery replacement.

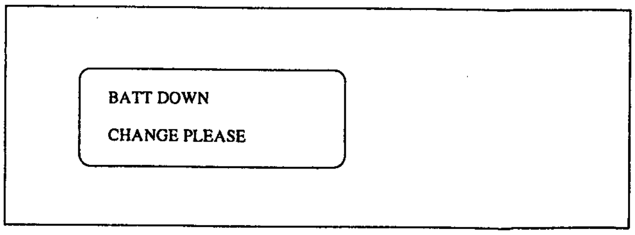

BATT DOWN
CHANGE PLEASE

Fig. 5-6

3. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

3-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

3-2. CLEANING OF TAPE PATH (Fig.6)

1) In the EJECT mode, clean the tape running system (TG1, 2, 3, 4, 5, 6, 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

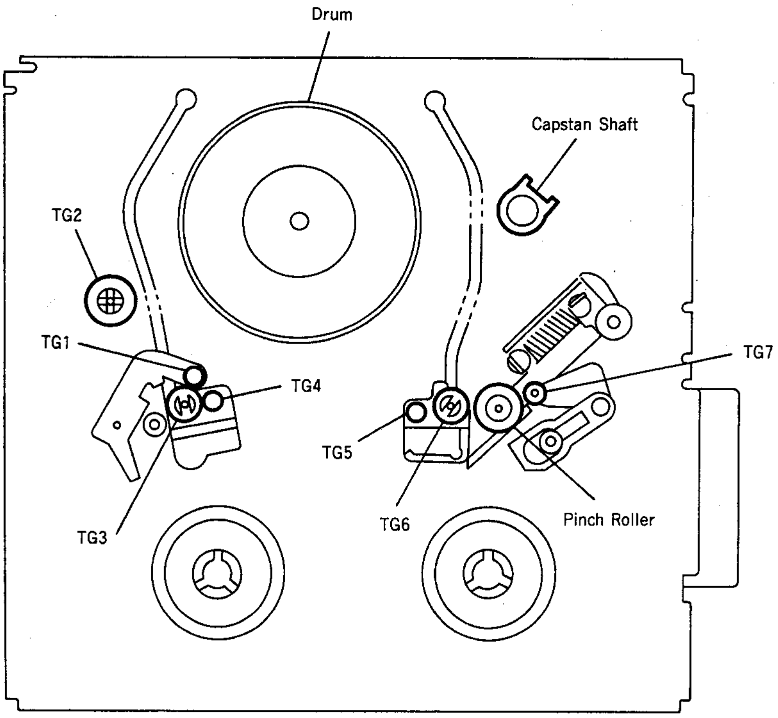


Fig. 6

3-3. PERIODIC CHECK ITEMS

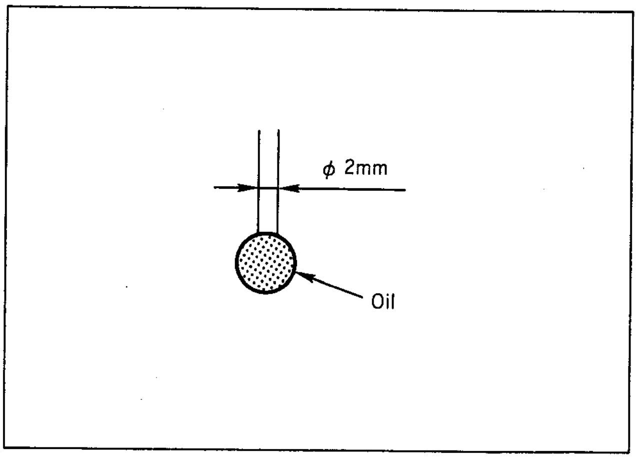
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Timing belt Timing belt (FL)	–	☆	–	☆	–	☆	–	☆	–	☆	3-953-986-01 3-954-079-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Be absolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	X-3942-946-1
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD. RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concering oil

- Be sure to use specified oil. (If you use oil with different viscosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be wron out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

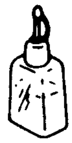


3-4. SERVICE JIGS LIST

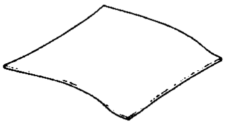
Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1NP) PAL (WR5-1CP)	8-967-995-02 8-967-995-07		Tape path
J-7	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-8	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-9	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-10	Adjusting remote controller (Modified RM-95)	J-6082-053-B		Tape pathe (Setting of PATH mode)
J-11	Mode selector II	J-6082-282-A		For all models
J-12	Mode selector conversion board (F, TK)	J-6082-278-A		
J-13	FWD B.T. adjusting driver chip	J-6082-187-A		

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

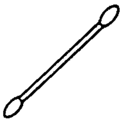
J-1



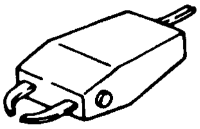
J-2



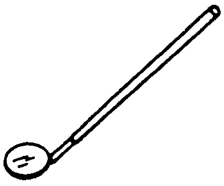
J-3



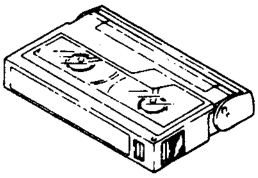
J-4



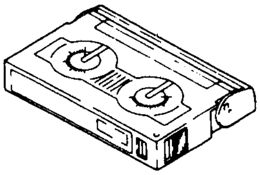
J-5



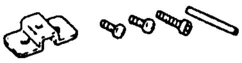
J-6



J-7

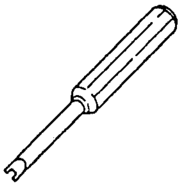


J-8

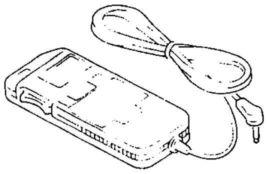


(Attached to the maintenance rotary upper drum)

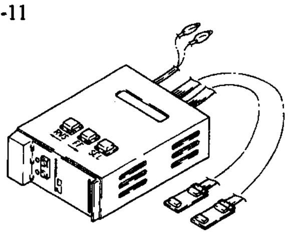
J-9



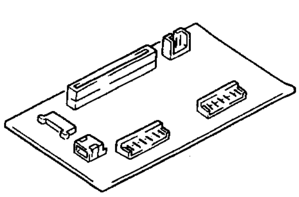
J-10



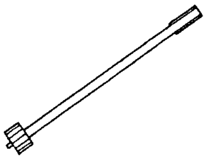
J-11



J-12



J-13



4. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the Mode selector Ⅱ (Ref. No. J-11) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the Mode selector buttons.

4-1. RP BLOCK (Fig.7)

1. Removal

1) Remove a screw ①.
2) Disconnect the connector ②.
3) Disengage claws Ⓐ at two places and remove the RP block ③.
4) Remove a screw ④, then the RP frame ⑤ in arrow direction.

2. Mounting

1) Mount the RP frame with its slot Ⓑ engaged with the chassis Ⓒ.
2) Tighten a screw ④.
3) Mount the RP block ③ and tighten a screw ①.
4) Connect the connector ②.

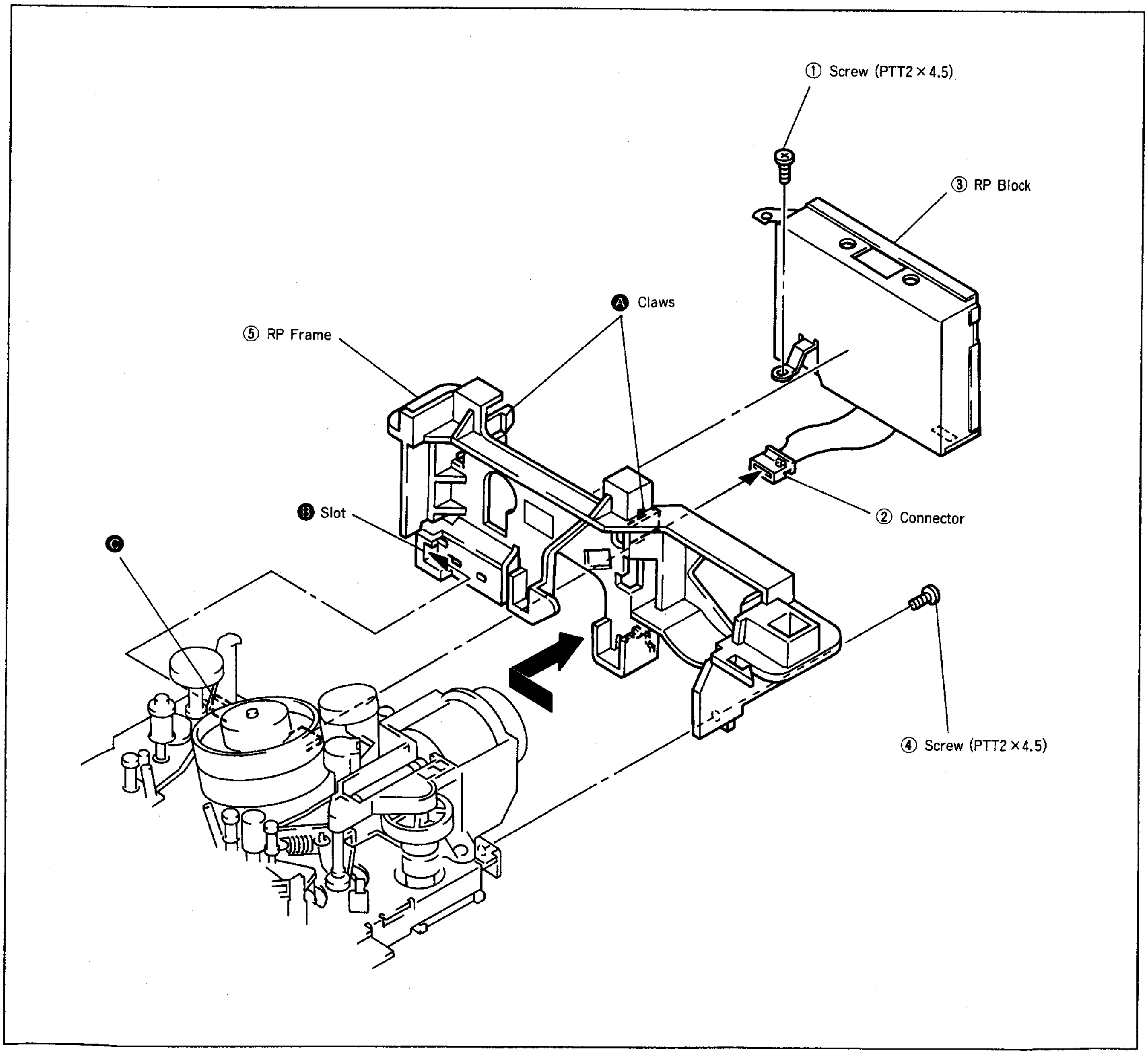

① Screw (PTT2×4.5)
③ RP Block
Ⓐ Claws
⑤ RP Frame
Ⓑ Slot
② Connector
Ⓒ
④ Screw (PTT2×4.5)

Fig. 7

4-2. IMPEDANCE ROLLER (Fig. 8)

1. Removal

1) Referring to 2-1, remove the FL cassette compartment assembly.
2) Referring to 4-1, remove the RP block.
3) Remove a tension coil spring ①.
4) Disengage a claw Ⓐ and remove the impedance roller base assembly ②.
5) Disengage a claw Ⓑ and remove the impedance roller ③.

2. Mounting

1) Mount the impedance roller ③, then the impedance roller base assembly ②.
2) Attach a tension coil spring ①.
3) Referring to 4-1, mount the RP block.
4) Referring to 2-1, mount the FL cassette compartment assembly.

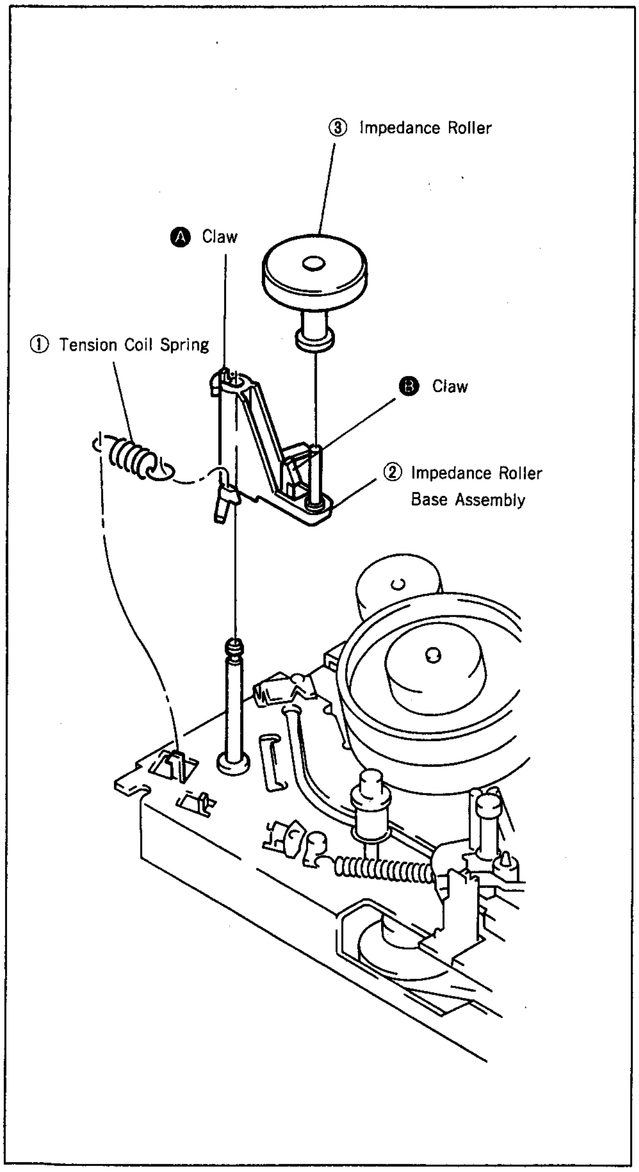

③ Impedance Roller
Ⓐ Claw
① Tension Coil Spring
Ⓑ Claw
② Impedance Roller Base Assembly

Fig. 8

4-3. HC ROLLER ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 4-1, remove the RP block.
2) Disengage a claw Ⓐ and remove the HC arm assembly ①.
3) Remove a lock washer ②, then the HC roller assembly ③.

2. Mounting

1) Mount the HC roller assembly ③ and fix with a lock washer ②.
2) Mount the HC arm assembly ①.
3) Referring to 4-1, mount the RP block.

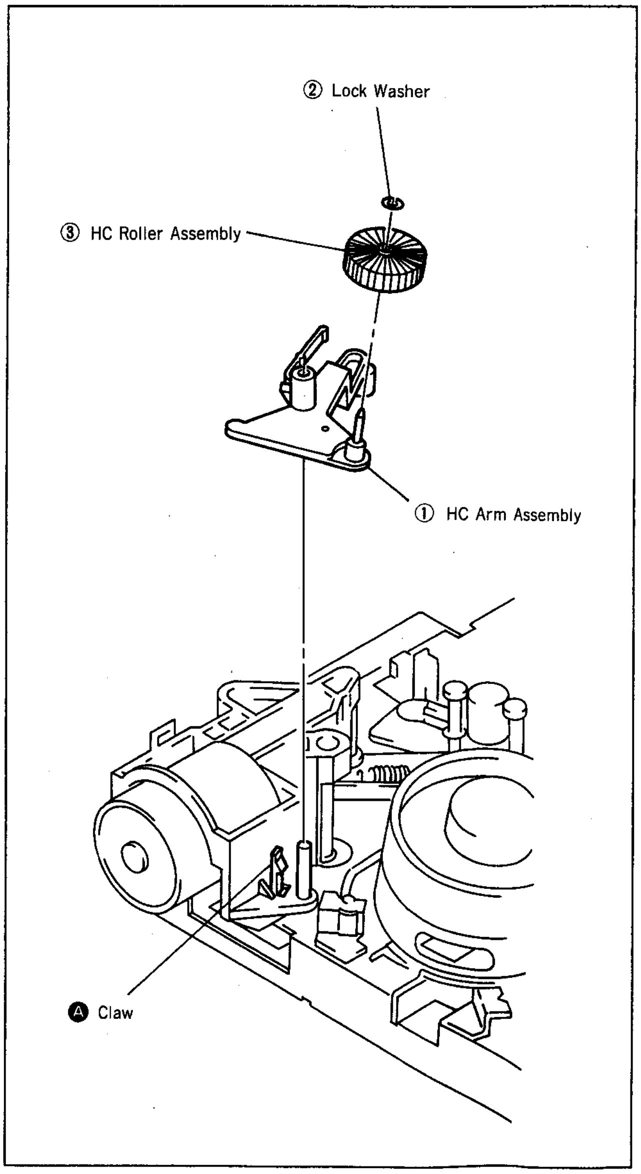

② Lock Washer
③ HC Roller Assembly
① HC Arm Assembly
Ⓐ Claw

Fig. 9

4-4. PENDULUM BASE ASSEMBLY AND SOFT BRAKE ASSEMBLY (T) (Fig. 10)

1. Removal

1) Referring to 2-1, remove the FL cassette compartment assembly.
2) Remove a tension coil spring ①.
3) Disengage a claw Ⓐ and remove the soft brake (T) assembly ②.
4) Remove two screws ③, then the reel unlock plate ④.
5) Remove the pendulum base assembly ⑤.

2. Mounting

1) Mount the pendulum base assembly ⑤ with its shaft Ⓑ inserted in the Ⓒ of pendulum forcing arm.
2) Mount the reel unlock plate ④ and tighten two screws (3).
3) Mount the soft brake (T) assembly ② and attach a tension coil spring ①.
4) Referring to 2-1, mount the FL cassette compartment assembly.

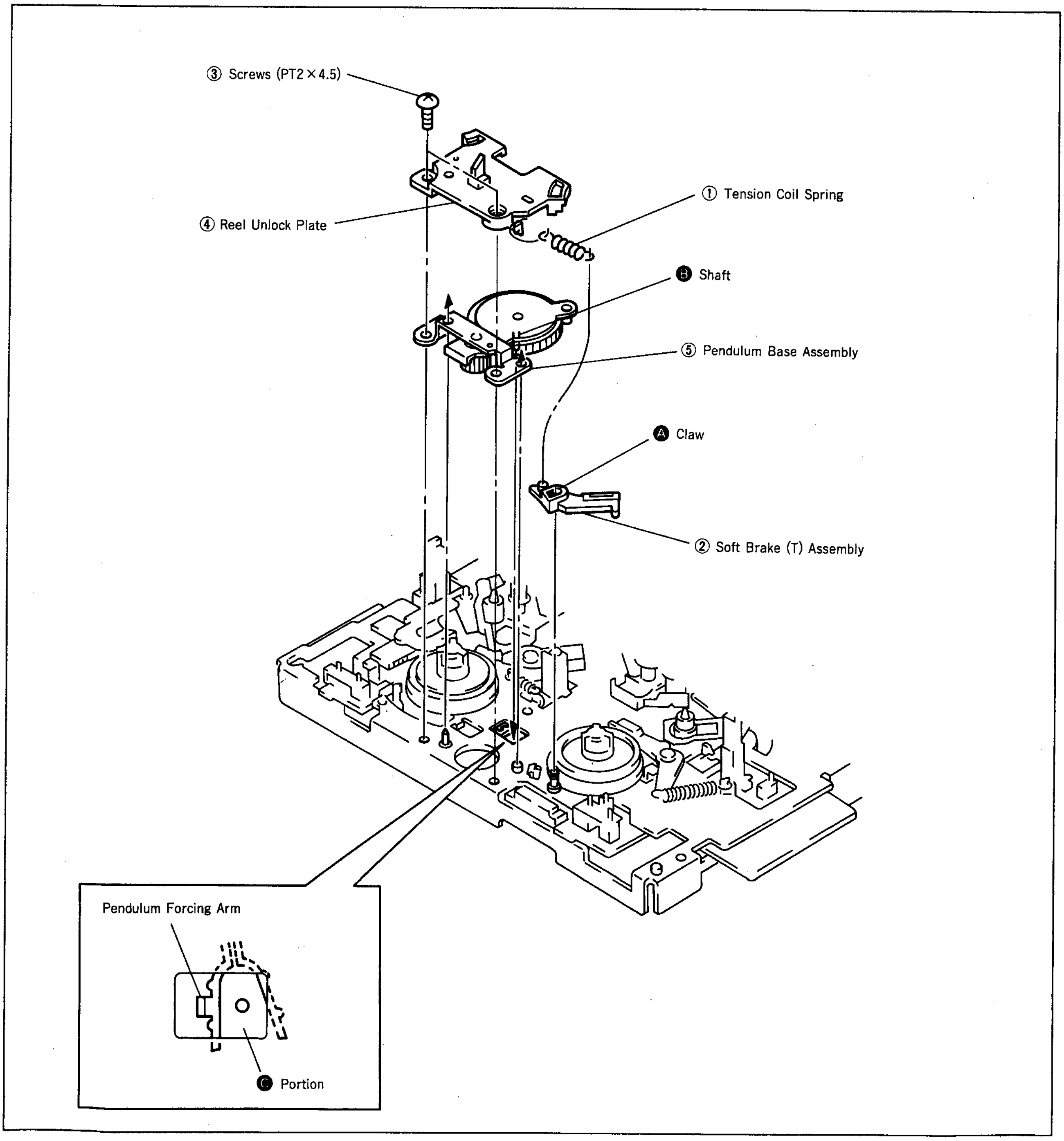

③ Screws (PT2 × 4.5)
④ Reel Unlock Plate
① Tension Coil Spring
Ⓑ Shaft
⑤ Pendulum Base Assembly
Ⓐ Claw
② Soft Brake (T) Assembly
Pendulum Forcing Arm
Ⓒ Portion

Fig. 10

4-5. BRAKE (S) ARM AND BRAKE (T) ARM ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 2-1, remove the FL cassette compartment assembly.
2) Remove a tension coil spring ①.
3) Disengage a claw 🅐 and remove the brake (S) arm ②.
4) Remove a tension coil spring ③.
5) Remove a lock washer 1.5 ④, then the brake (T) arm assembly ⑤.

2. Mounting

1) Mount the brake (T) arm assembly ⑤ with its shaft inserted into a hole 🅓 in mechanical chassis.
2) Attach a lock washer ④.
3) Attach a tension coil spring ③.
4) Insert the shaft 🅔 of brake (S) arm ② into a groove 🅕 of slide plate, and the shaft 🅖 of brake (S) drive lever into a hole 🅗 in brake (S) arm respectively.
5) Attach a tension spring ①.
6) Referring to 2-1, mount the FL cassette compartment assembly.

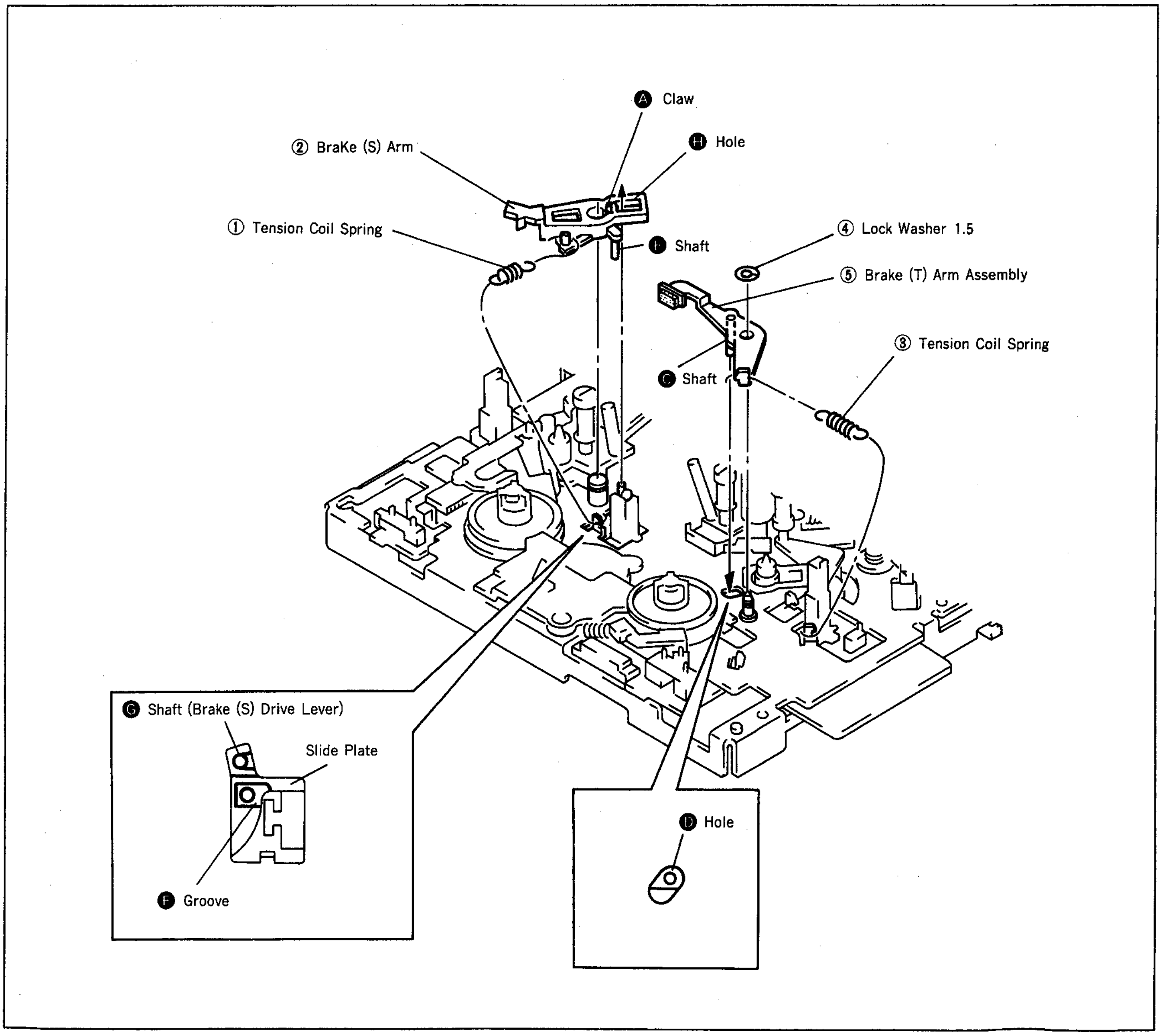

🅐 Claw
② BraKe (S) Arm
🅗 Hole
① Tension Coil Spring
🅔 Shaft
④ Lock Washer 1.5
⑤ Brake (T) Arm Assembly
③ Tension Coil Spring
🅓 Shaft
🅖 Shaft (Brake (S) Drive Lever)
Slide Plate
🅕 Groove
🅓 Hole

Fig. 11

4-6. TENSION REGULATOR ASSEMBLY, REEL TABLE (S) ASSEMBLY AND REEL TABLE (T) ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 2-1, remove the FL cassette compartment assembly.
2) Referring to 4-5, remove the brake (S) arm and brake (T) arm assembly.
3) Remove a tension coil spring ①.
4) Remove a screw ②, then the tension regulator band assembly ③ and the tension regulator assembly ④.

Note : Do not twist or bend, or do not touch the felt surface when removing the tension regulator band assembly.

5) Remove the reel table (S) assembly ⑤ and the reel table (T) assembly ⑥.

2. Mounting

1) Mount the reel table (S) assembly ⑤ and the reel table (T) assembly ⑥.
2) Mount the tension regulator assembly ④ with its shafts Ⓐ, Ⓑ inserted into holes Ⓒ, Ⓓ in chassis respectively.
3) Wind the tension regulator band assembly ③ onto the reel table (S) assembly ⑤.

Note : Do not twist or bend, or do not touch the felt surface when mounting the tension regulator band assembly.

4) Mount the tension regulator band assembly ③, meeting with the dowels Ⓔ of the chassis.
5) Tighten a screw ②.
6) Attach a tension coil spring ①.
7) Referring to 4-5, mount the brake (S) arm and the brake (T) arm assembly.
8) Referring to 2-1, mount the FL cassette compartment assembly.
9) Referring to 4-23, adjust the tension regulator position.
10) Referring to 4-24, adjust the FWD back tension.

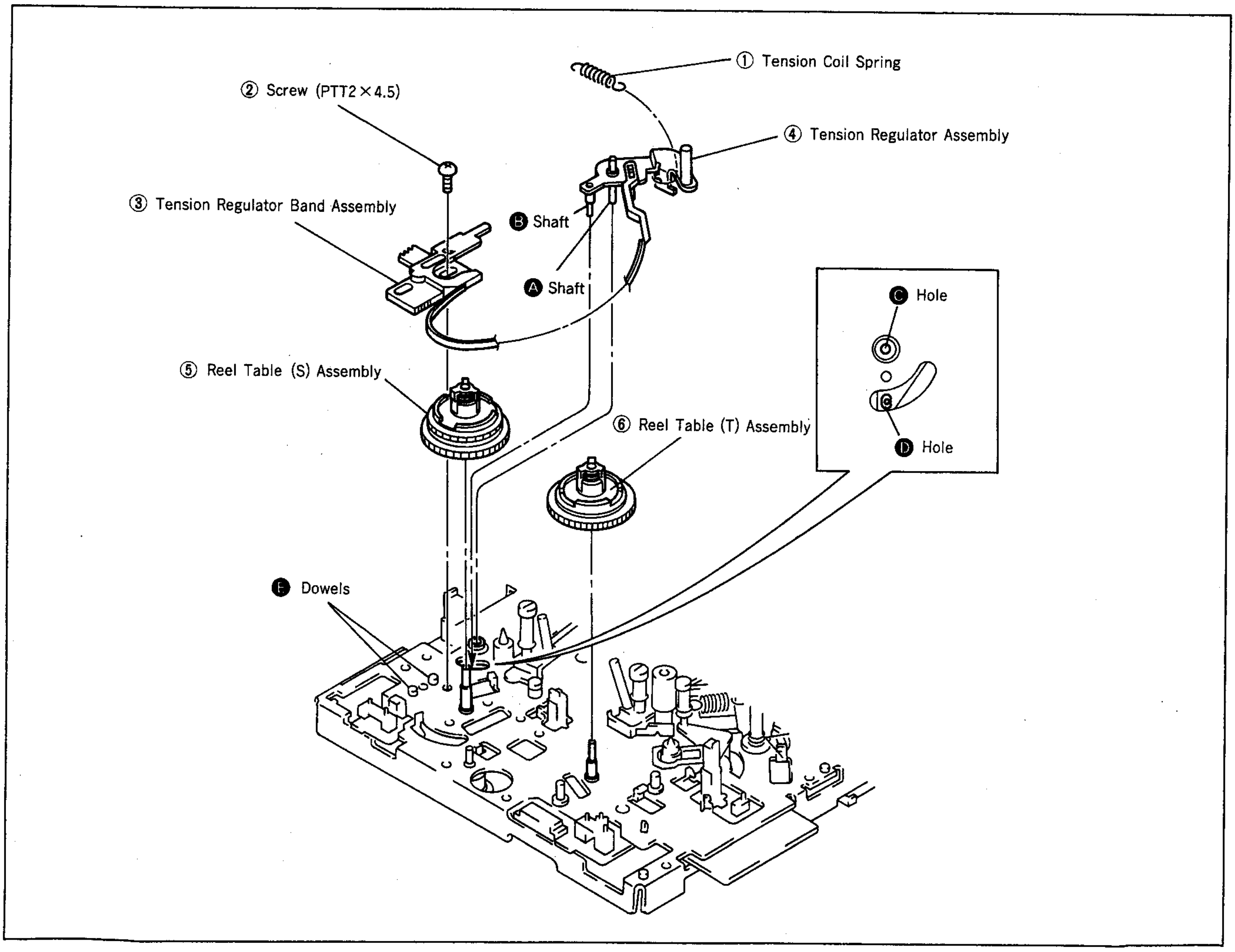

① Tension Coil Spring
② Screw (PTT2×4.5)
④ Tension Regulator Assembly
③ Tension Regulator Band Assembly
Ⓑ Shaft
Ⓐ Shaft
Ⓒ Hole
Ⓓ Hole
⑤ Reel Table (S) Assembly
⑥ Reel Table (T) Assembly
Ⓔ Dowels

Fig. 12

4-7. TG2 ASSEMBLY (Fig. 13)

1. Removal

1) Remove the TG2 upper flange ①.
2) Remove the TG2 roller ②, TG2 sleeve ③, TG2 lower flange ④ and compression coil spring ⑤.

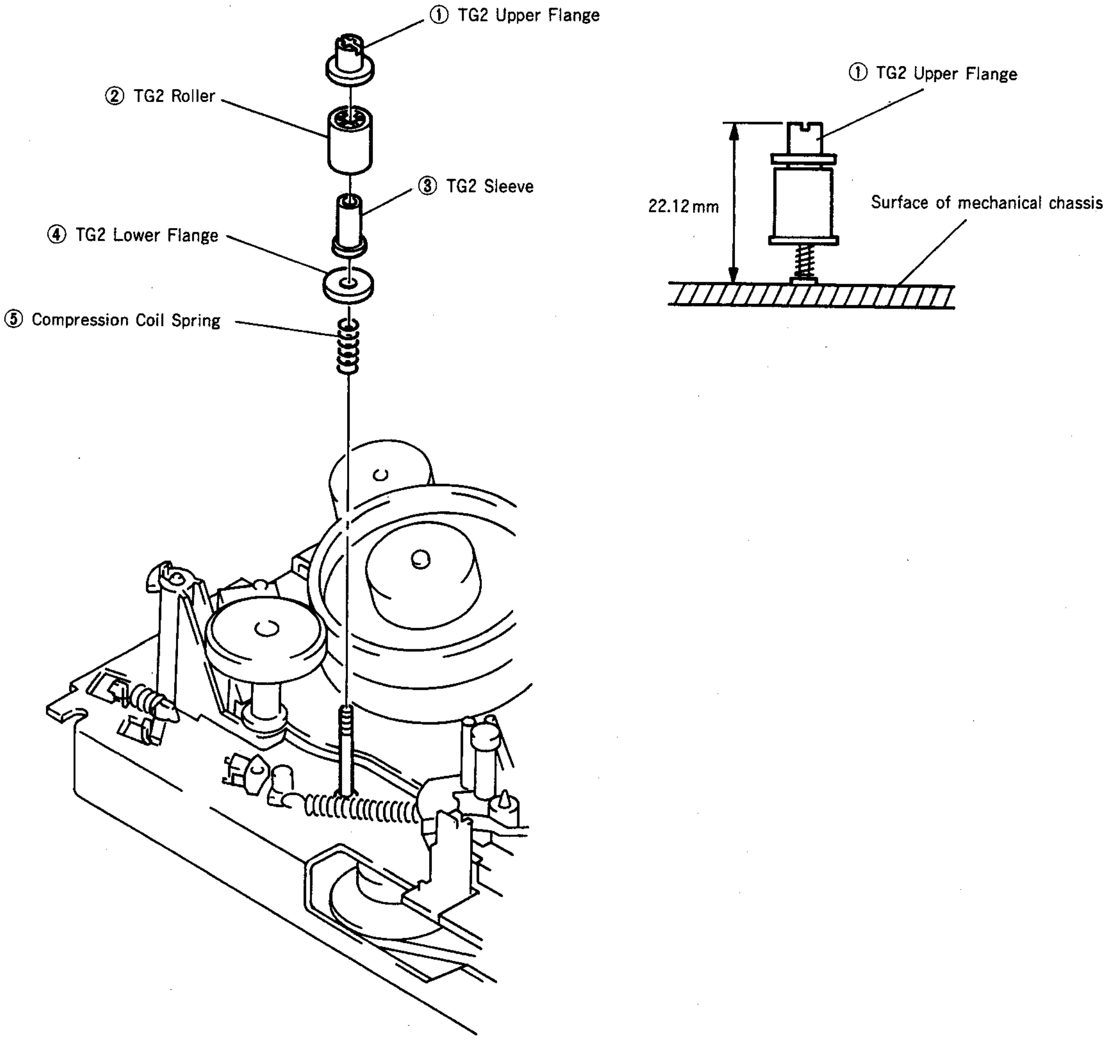
2. Mounting

1) Mount the compression coil spring ⑤, TG2 lower flange ④, TG2 sleeve ③ and TG2 roller ②.
2) Rotate the TG2 upper flange ① by 4 to 6 turns to fix on the shaft.

3. Presetting of TG2 Height

1) Rotate to adjust the TG2 upper flange ① so that the height from top surface of mechanical chassis to top surface of TG2 upper flange is 22.12mm.

Note : After mounting, perform 5. Tape Path Adjustment.



① TG2 Upper Flange
② TG2 Roller
③ TG2 Sleeve
④ TG2 Lower Flange
⑤ Compression Coil Spring
① TG2 Upper Flange
22.12mm
Surface of mechanical chassis

Fig. 13

4-8. TG7 ARM ASSEMBLY (Fig.14)

1. Removal

1) Referring to 2-1, remove the FL cassette compartment assembly.
2) Remove the TG7 height adjusting screw ①, then the TG7 spacer ② and reel table thrust washer ③.
3) Remove the TG7 arm assembly ④ and a torsion coil spring ⑤.

2. Mounting

1) Insert the shaft 🅐 of TG7 arm assembly ④ into a groove 🅑 in TG7 drive lever, and attach a torsion coil spring ⑤ as shown below.
2) Mount a reel table thrust washer ③ and a TG7 spacer ②, and tighten tentatively the TG7 height adjusting screw.
   At this time, the height from mechanical chassis top surface to TG7 arm top surface should be 3.3mm.
3) Referring to 2-1, mount the FL cassette compartment assembly.

Note : After mounting, perform 5. Tape Path Adjustment.

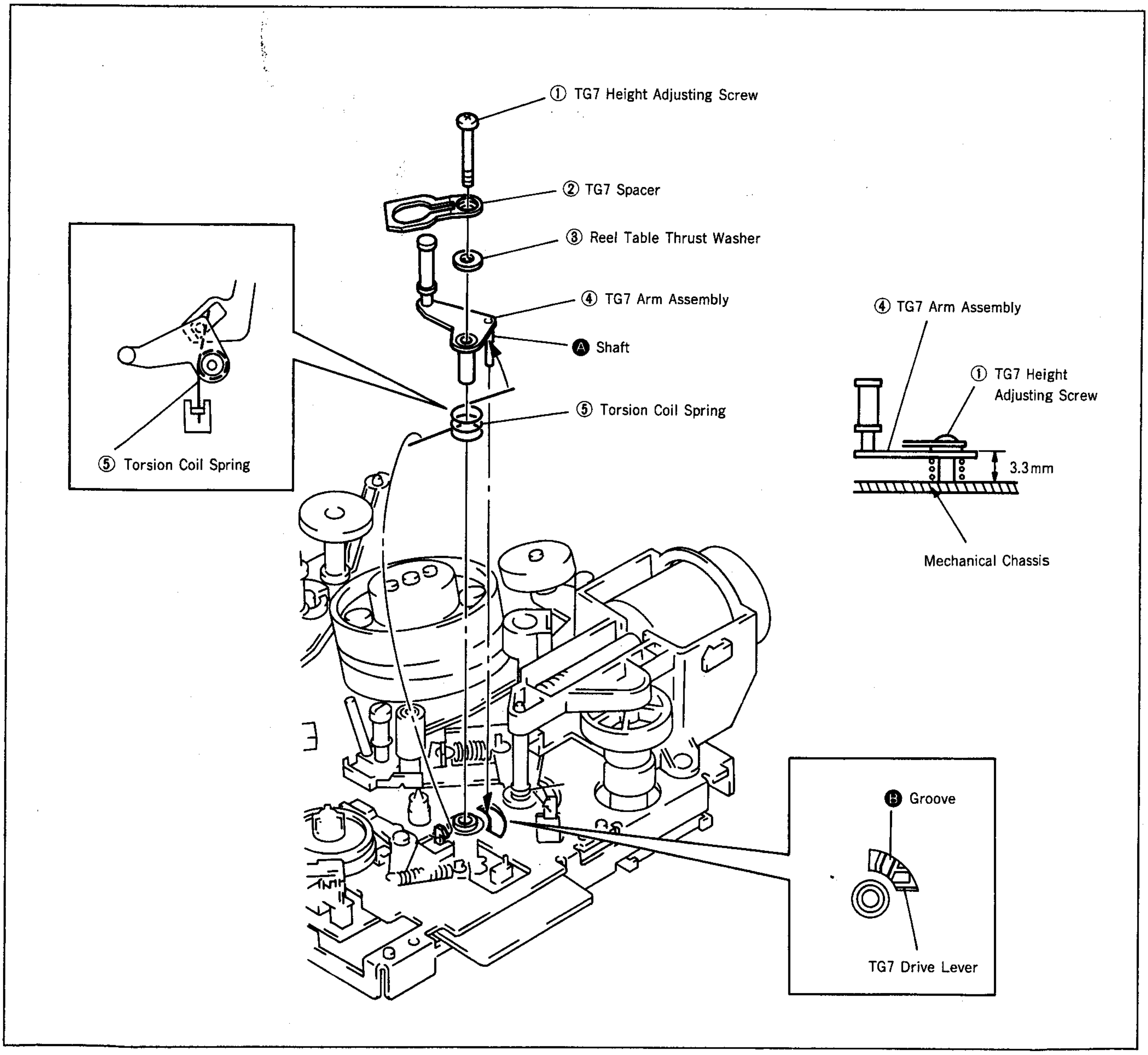

① TG7 Height Adjusting Screw
② TG7 Spacer
③ Reel Table Thrust Washer
④ TG7 Arm Assembly
🅐 Shaft
⑤ Torsion Coil Spring
⑤ Torsion Coil Spring
④ TG7 Arm Assembly
① TG7 Height Adjusting Screw
3.3mm
Mechanical Chassis
🅑 Groove
TG7 Drive Lever

Fig. 14

4-9. CAM MOTOR ASSEMBLY (Fig. 15)

1. Removal

1) Referring to 4-1, remove the RP block.
2) Remove a screw ①.
3) Disengage a claw 🅐 and remove the cam motor assembly ② in the arrow direction.

2. Mounting

1) Mount the cam motor assembly ② with its hole 🅒 inserted into the shaft 🅑 of chassis.
2) Tighten a screw ①.
3) Referring to 4-1, mount the RP block.

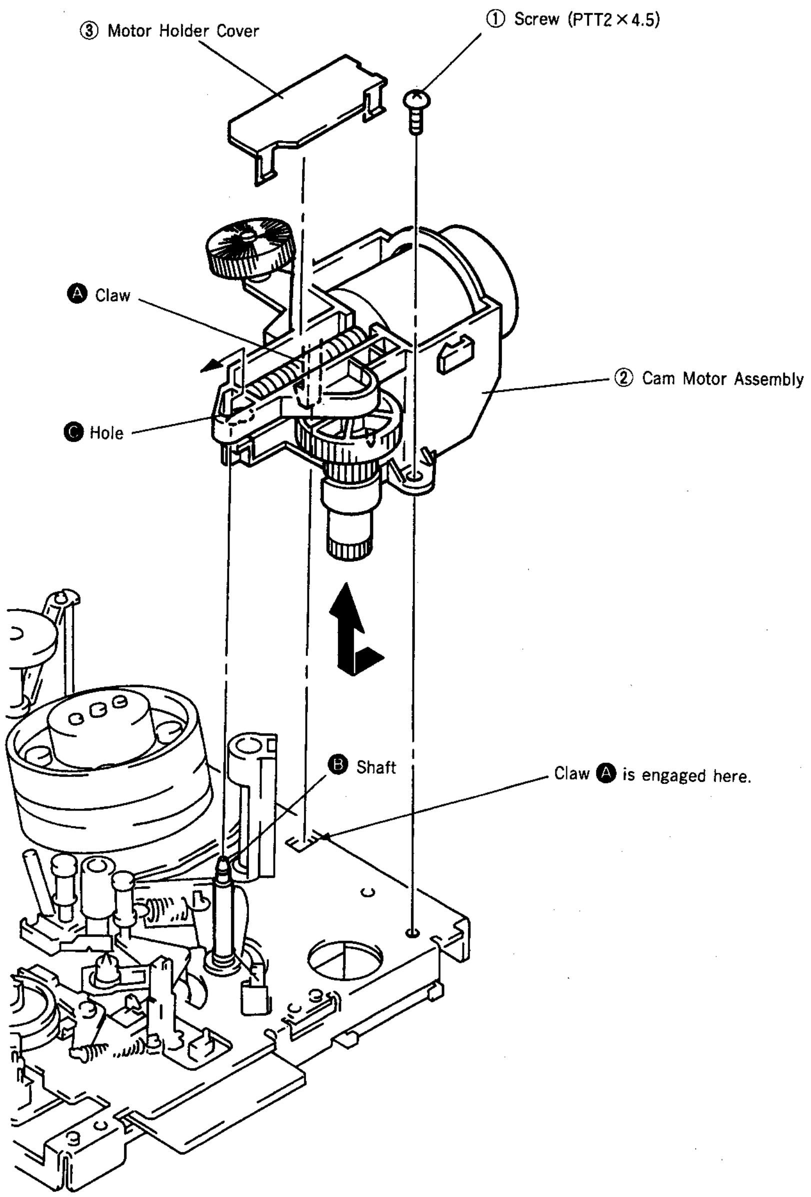

③ Motor Holder Cover
① Screw (PTT2×4.5)
🅐 Claw
② Cam Motor Assembly
🅒 Hole
🅑 Shaft
Claw 🅐 is engaged here.

Fig. 15

4-10. PINCH ARM ASSEMBLY (Fig. 16)

1. Removal

1) Referring to 2-1, remove the FL cassette compartment assembly.
2) Execute the loading until the pinch arm assembly ② becomes level.
3) Referring to 4-9, remove the cam motor assembly.
4) Remove a torsion coil spring ①, then the pinch arm assembly ②.

2. Mounting

1) Mount the pinch arm assembly ② with its hole Ⓐ inserted into the claw Ⓑ of pinch drive lever on the chassis.
2) Attach a torsion coil spring ① as shown below.
3) Referring to 4-9, mount the cam motor assembly.
4) Referring to 2-1, mount the FL cassette compartment assembly.

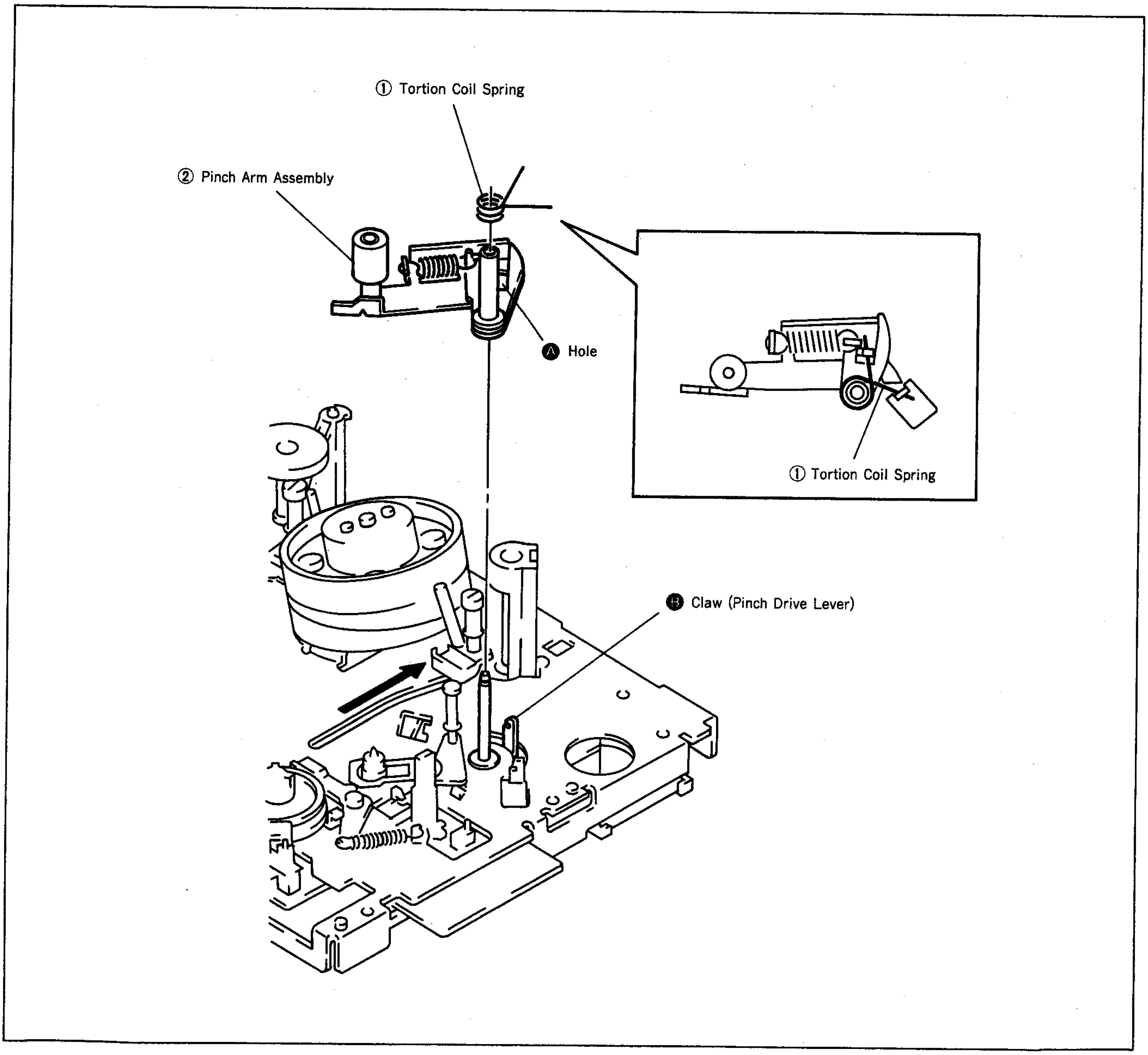

① Tortion Coil Spring
② Pinch Arm Assembly
Ⓐ Hole
① Tortion Coil Spring
Ⓑ Claw (Pinch Drive Lever)

Fig. 16

4-11. WORM WHEEL BRACKET (Fig. 17)

1. Removal

1) Remove a screw ①, then the shaft earth assembly ②.
2) Remove a screw ③, then the worm wheel bracket ④ in the arrow direction.

2. Mounting

1) Mount the worm wheel bracket ④ with its hole 🅑 inserted into the shaft 🅐 of mechanical chassis.
2) Tighten a screw ③.
3) Mount the shaft earth assembly ② and tighten a screw ①.

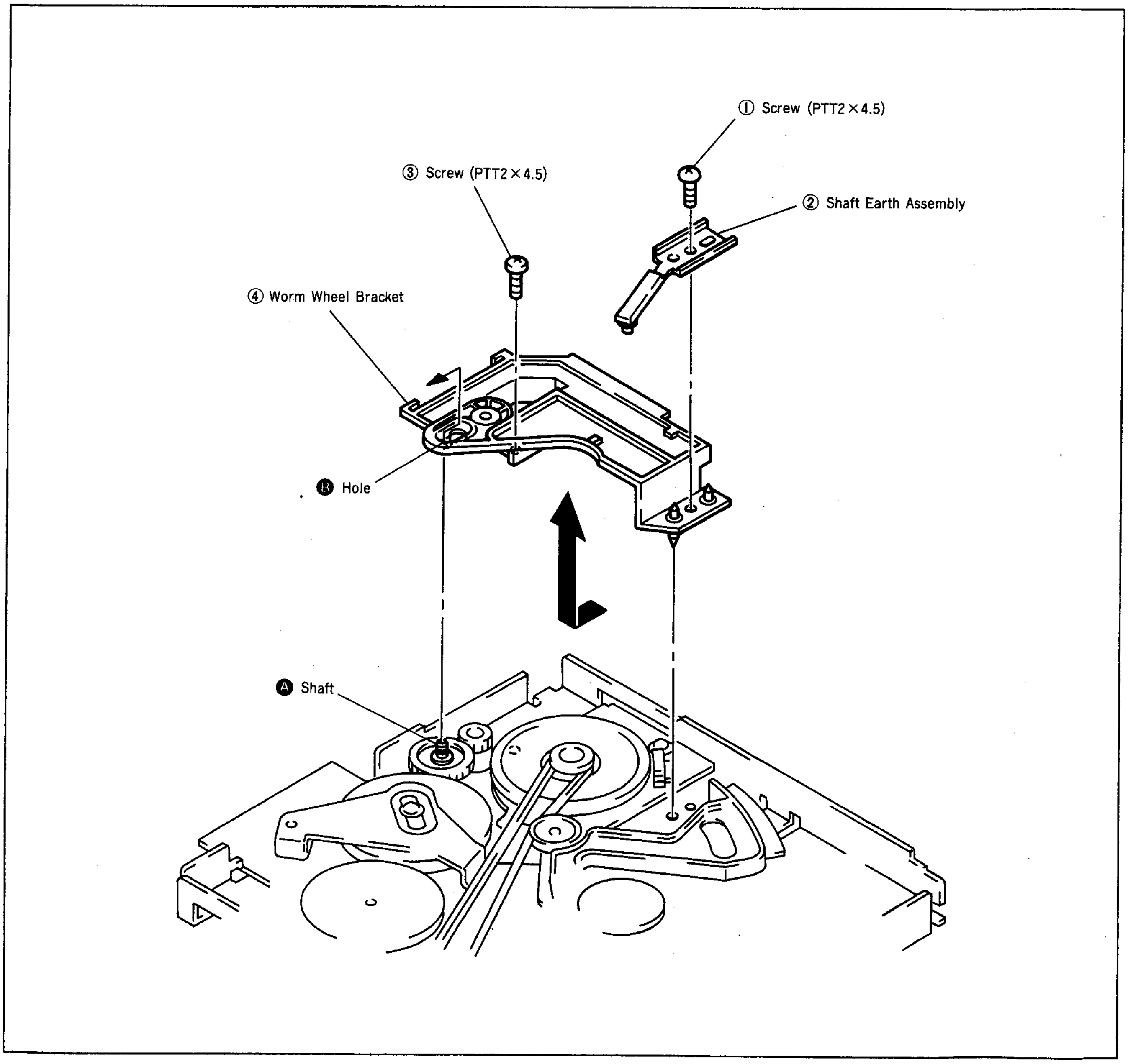

① Screw (PTT2 × 4.5)
③ Screw (PTT2 × 4.5)
② Shaft Earth Assembly
④ Worm Wheel Bracket
🅑 Hole
🅐 Shaft

Fig. 17

4-12. CAPSTAN MOTOR (Fig. 18)

1. Removal

1) Referring to 4-11, remove the worm wheel bracket.
2) Disengage the timing belt ①.
3) Remove a screw ②, then the capstan motor ③.

2. Mounting

1) Mount the capstan motor ③ with its dowels **B** inserted into holes **A** in the mechanical chassis at two places.

Note : Do not touch the capstan motor shaft, oil seal and rotor.

2) Tighten a screw ②.
3) Engage the timing belt ①.
4) Referring to 4-11, mount the worm wheel bracket.

Note : After mounting, perform 5. Tape Path Adjustment.

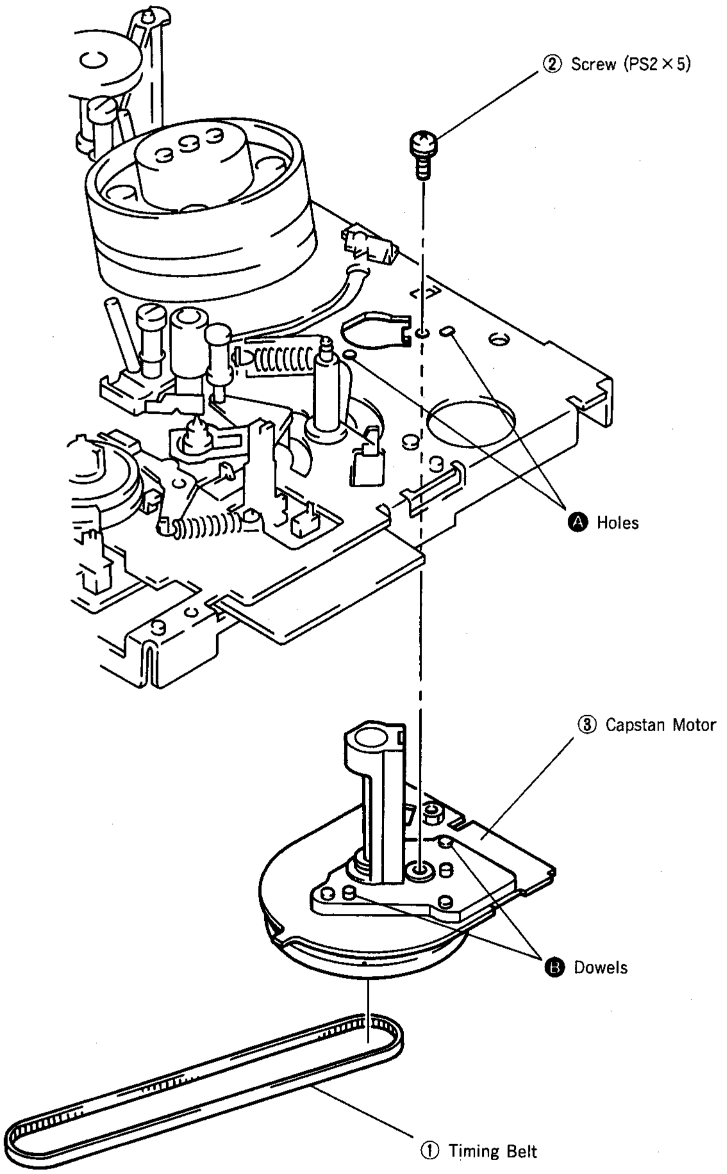

② Screw (PS2 × 5)
A Holes
③ Capstan Motor
B Dowels
① Timing Belt

Fig. 18

4-13. DRUM ASSEMBLY (Fig. 19)

1. Removal

1) Referring to 4-1. RP Block, disconnect the connector for drum.
2) Remove three screws (M2x5) ①.
3) Remove the drum assembly ②.

Note : Do not touch the outer surface of drum; hold portions (A) and (B) of drum.

2. Mounting

1) Mount the drum ② while aligning with dowels 🅐 of chassis at two places.

Note : Do not touch the outer surface of drum; hold portions (A) and (B) of drum.

2) Tighten three screws (M2x5) ①.
   - 2)-1 Tighten a screw ⓐ to the torque 29.42mN·m (300g·cm).
   - 2)-2 Tighten a screw ⓑ to the torque 29.42mN·m (300g·cm), then return 45°. (Apply a screw locking agent.)
   - 2)-3 Tighten a screw ⓒ to the torque 29.42mN·m (300g·cm), then return 45°. (Apply a screw locking agent.)

Note : After mounting, perform 5. Tape Path Adjustment.

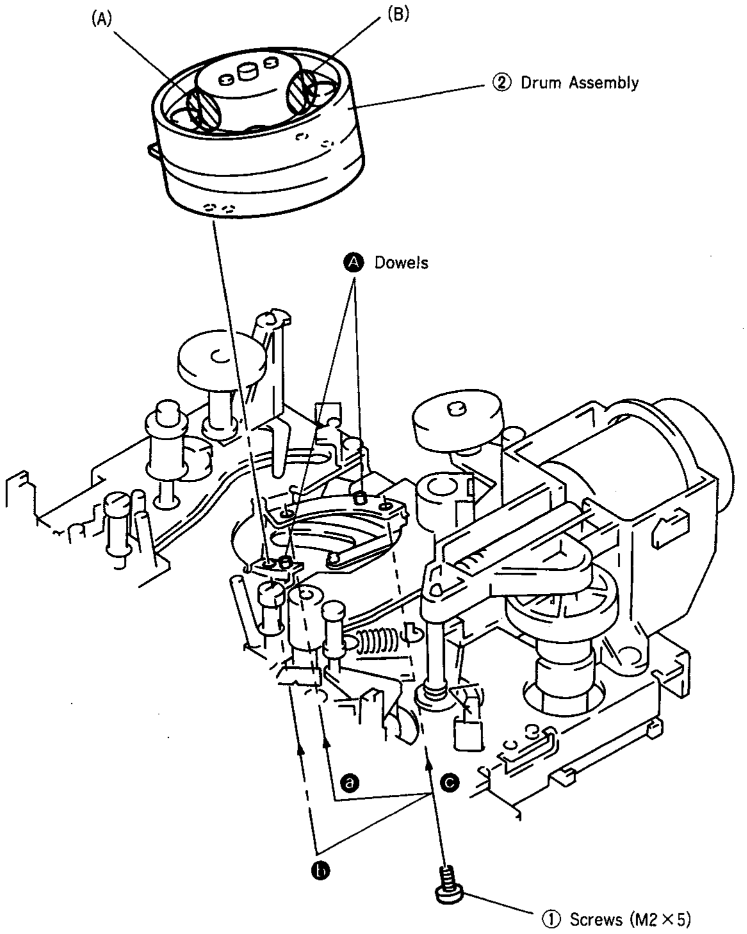


Fig. 19

4-14. PULLEY BASE ASSEMBLY (Fig. 20)

1. Removal

1) Remove a screw ①, then the W2, middle ②.
2) Disengage a claw Ⓐ and remove the pulley base assembly ③.

2. Mounting

1) Mount the pulley base assembly ③ on the shaft Ⓓ of mechanical chassis, and engage the timing belt Ⓒ with the pulley Ⓑ.
2) Mount the W2, middle ② and tighten tentatively the screw ①.
3) Tighten the screw ① at the position where the portion (A) of pulley base assembly ③ is pushed with 14g force.

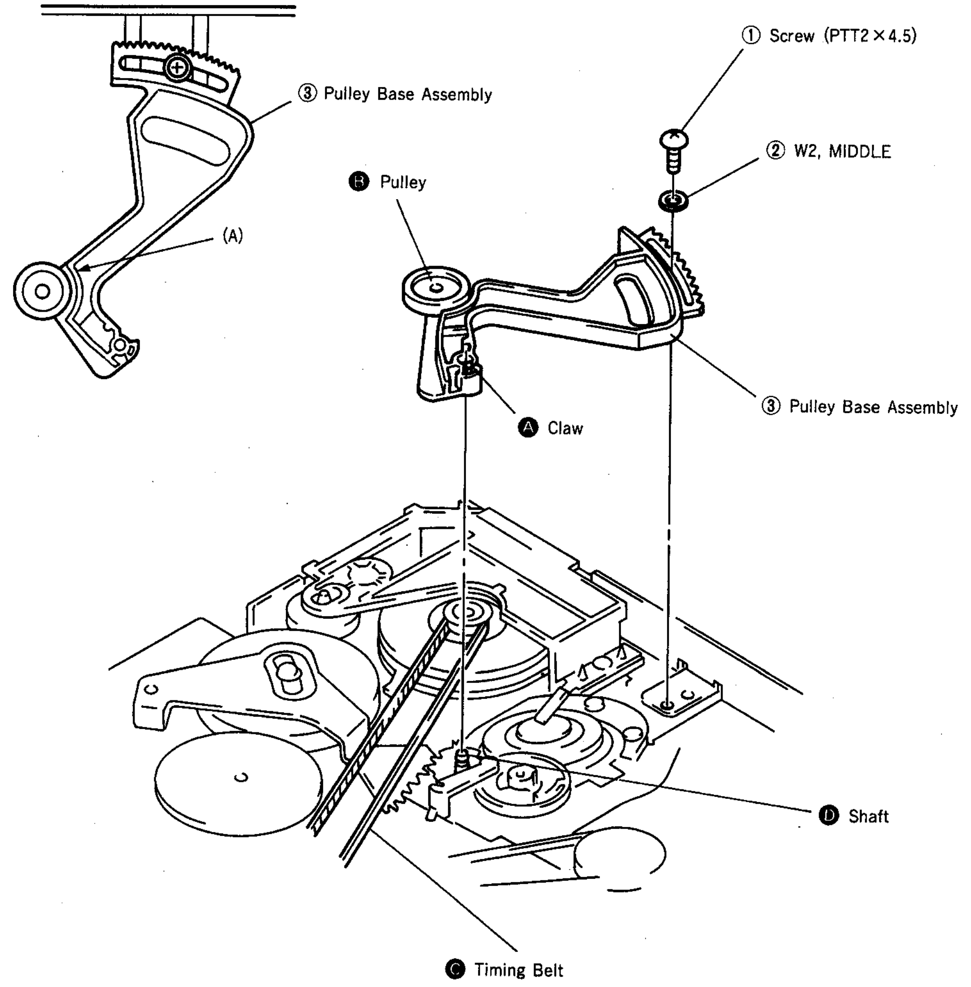

① Screw (PTT2×4.5)
③ Pulley Base Assembly
② W2, MIDDLE
Ⓑ Pulley
(A)
③ Pulley Base Assembly
Ⓐ Claw
Ⓓ Shaft
Ⓒ Timing Belt

Fig. 20

4-15. LOADING DRIVE LEVER (Fig. 21)

1. Removal

1) Disengage the timing belt ①.
2) Remove a screw ②, then the W3, small ③.
3) Remove the loading drive lever ④.

2. Mounting

1) Mount the loading drive lever ④ on the shaft 🅐 of chassis with its shaft 🅓 inserted into the loading roller ⑤.
   At this time, insert the shaft 🅑 of main cam into the hole 🅒 in loading drive lever, the shaft 🅓 of loading drive lever into a slot 🅔 in main cam, and align a line 🅕 on loading drive lever with a line 🅖 on loading gear (T) respectively.
2) Mount the W3, small ③ and tighten tentatively the screw ②.
3) Engage the timing belt ①.

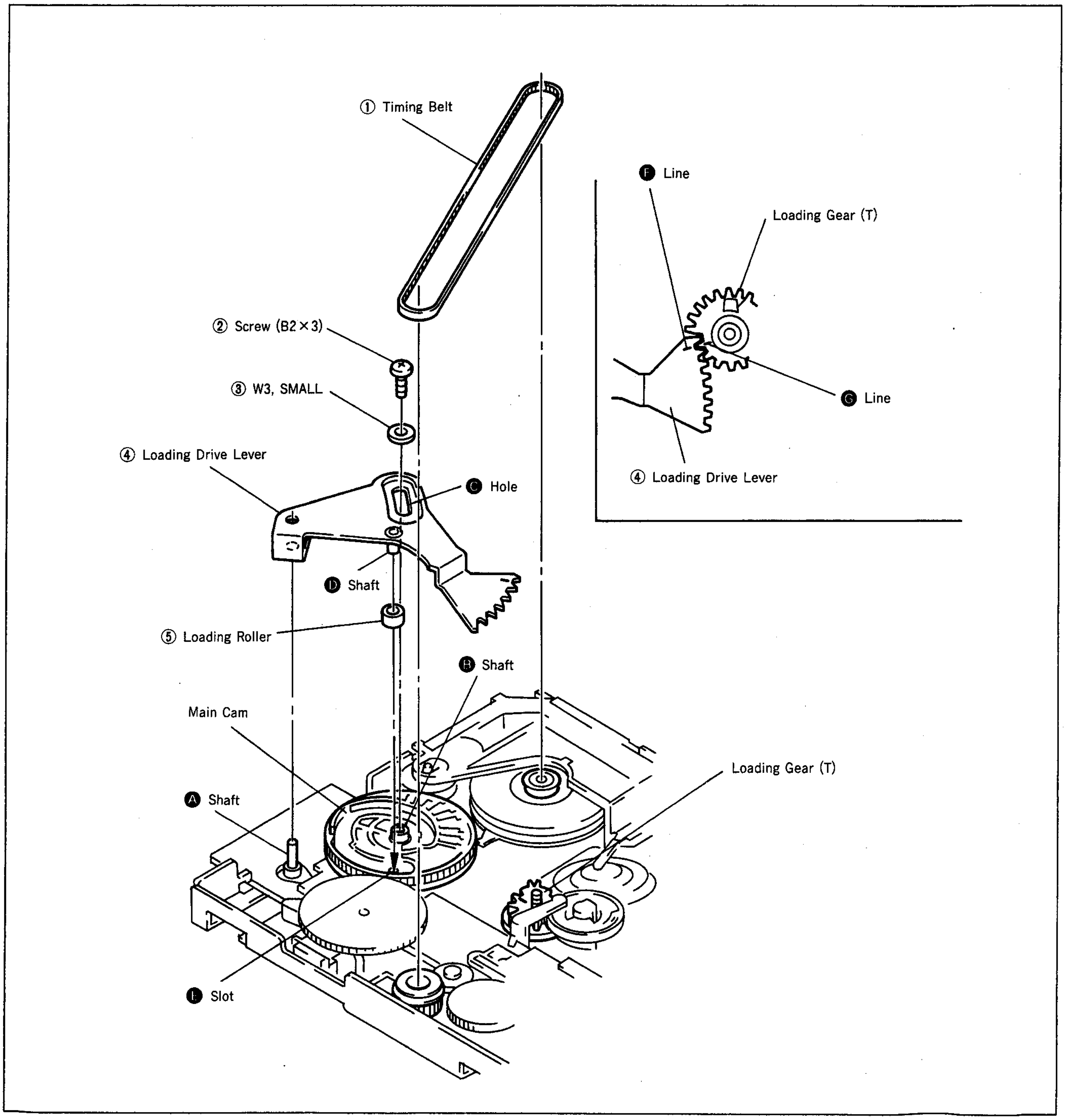

① Timing Belt
② Screw (B2×3)
③ W3, SMALL
④ Loading Drive Lever
🅒 Hole
🅓 Shaft
⑤ Loading Roller
🅑 Shaft
Main Cam
🅐 Shaft
🅔 Slot
Loading Gear (T)
🅕 Line
Loading Gear (T)
🅖 Line
④ Loading Drive Lever

Fig. 21

4-16. ROTARY SWITCH AND MAIN CAM (Fig. 22)

1. Removal

1) Referring to 4-11, remove the worm wheel bracket.
2) Referring to 4-15, remove the loading drive lever.
3) Remove the cam relay gear ①.
4) Disengage claws 🅐 at two places, and disconnect the rotary switch ② from the connector 🅑.
5) Remove the main cam ③.

2. Mounting

1) Mount the main cam ③ with its cam groove 🅒 inserted into the shaft 🅓 of slide plate drive lever, and cam groove 🅔 into the shaft 🅕 of pinch drive lever respectively.
2) Referring to 4-15, mount the loading drive lever.
3) Mount the cam relay gear ①.
4) Referring to 4-11, mount the worm wheel bracket.
5) Connect the rotary switch ② to the connector 🅑 while aligning ▲ marks each other, and its recess 🅗 with the recess 🅖 of main cam ③.

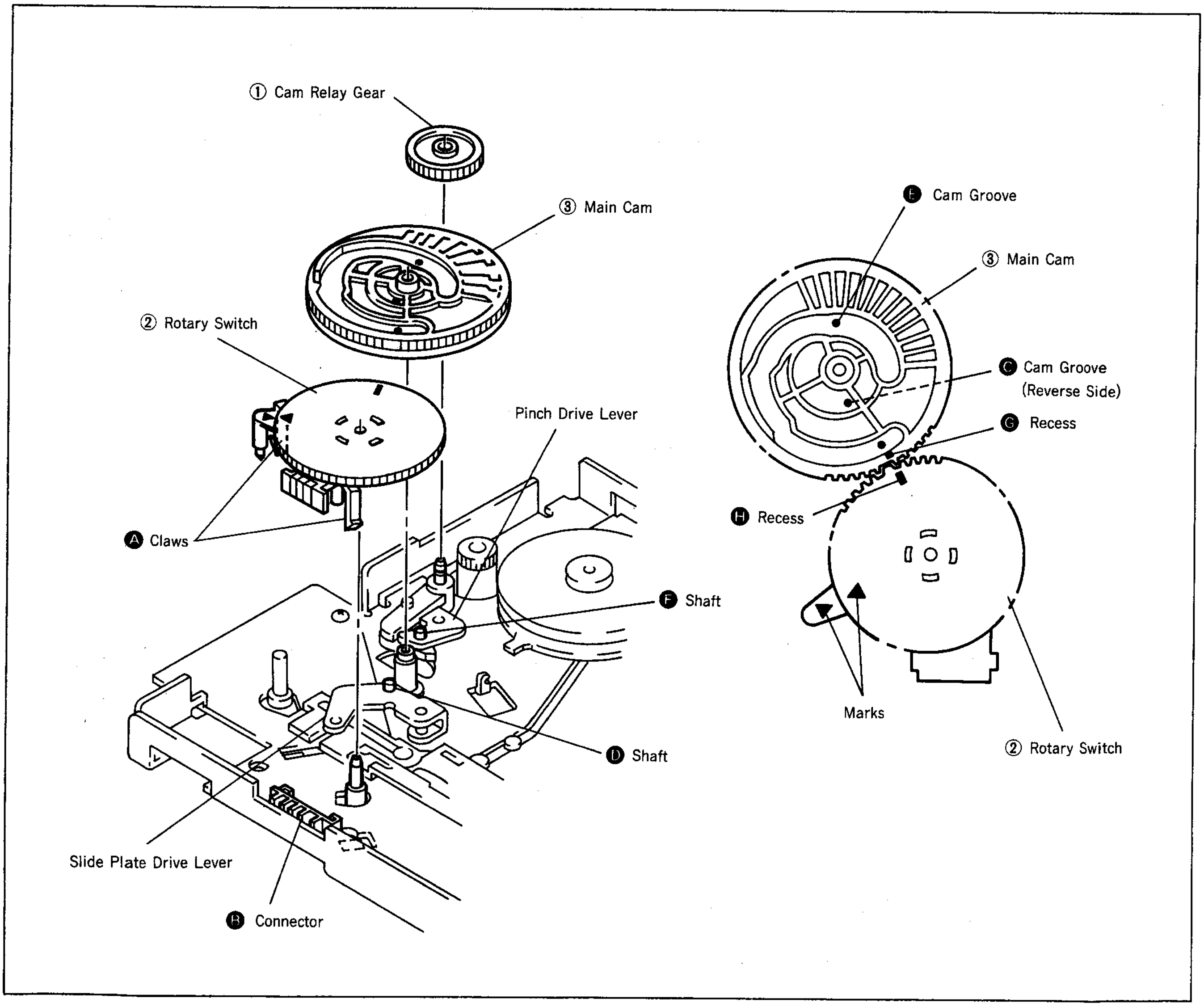

① Cam Relay Gear
③ Main Cam
② Rotary Switch
Pinch Drive Lever
🅐 Claws
🅕 Shaft
🅓 Shaft
Slide Plate Drive Lever
🅑 Connector
🅔 Cam Groove
③ Main Cam
🅒 Cam Groove (Reverse Side)
🅖 Recess
🅗 Recess
Marks
② Rotary Switch

Fig. 22

4-17. SLIDE PLATE (Fig. 23)

1. Removal

1) Referring to 4-11, remove the worm wheel bracket.
2) Referring to 4-15, remove the loading drive lever.
3) Referring to 4-16, remove the rotary switch and main cam.
4) Remove the slide plate drive lever ①.
5) Disengage the timing belt ②.
6) Disengage a claw 🅐 and remove the FL pulley gear (drive) ③.
7) Remove a tension coil spring ④, then the FL switching arm assembly ⑤.
8) Remove the brake (S) drive lever ⑧.
9) Remove two lock washers 1.5 ⑥, then the slide plate ⑦.

2. Mounting

1) Mount the slide plate ⑦ with its groove 🅑 inserted into the shaft 🅒 of chassis, the groove 🅓 into the shaft 🅔 of S take-up assembly, and the groove 🅕 into the shaft 🅖 respectively.
At this time, insert the shaft 🅗 into the groove 🅚 in slide plate while holding the tension regulator sub-arm toward the arrow.
2) Mount two lock washers 1.5 ⑥.
3) Referring to 3) of Mounting in 4-18, mount the brake (S) drive lever ⑧.
4) Mount the FL switching arm assembly ⑤ and a tension coil spring (4).
5) Mount the FL pulley gear (drive) ③ and engage the timing belt ②.
6) Mount the slide plate drive lever ① with its shaft 🅜 inserted into a groove 🅞 in slide plate ⑦, and its hole into the shaft 🅟 of chassis.
7) Referring to 4-16, mount the rotary switch and main cam.
8) Referring to 4-15, mount the loading drive lever.
9) Referring to 4-11, mount the worm wheel bracket.

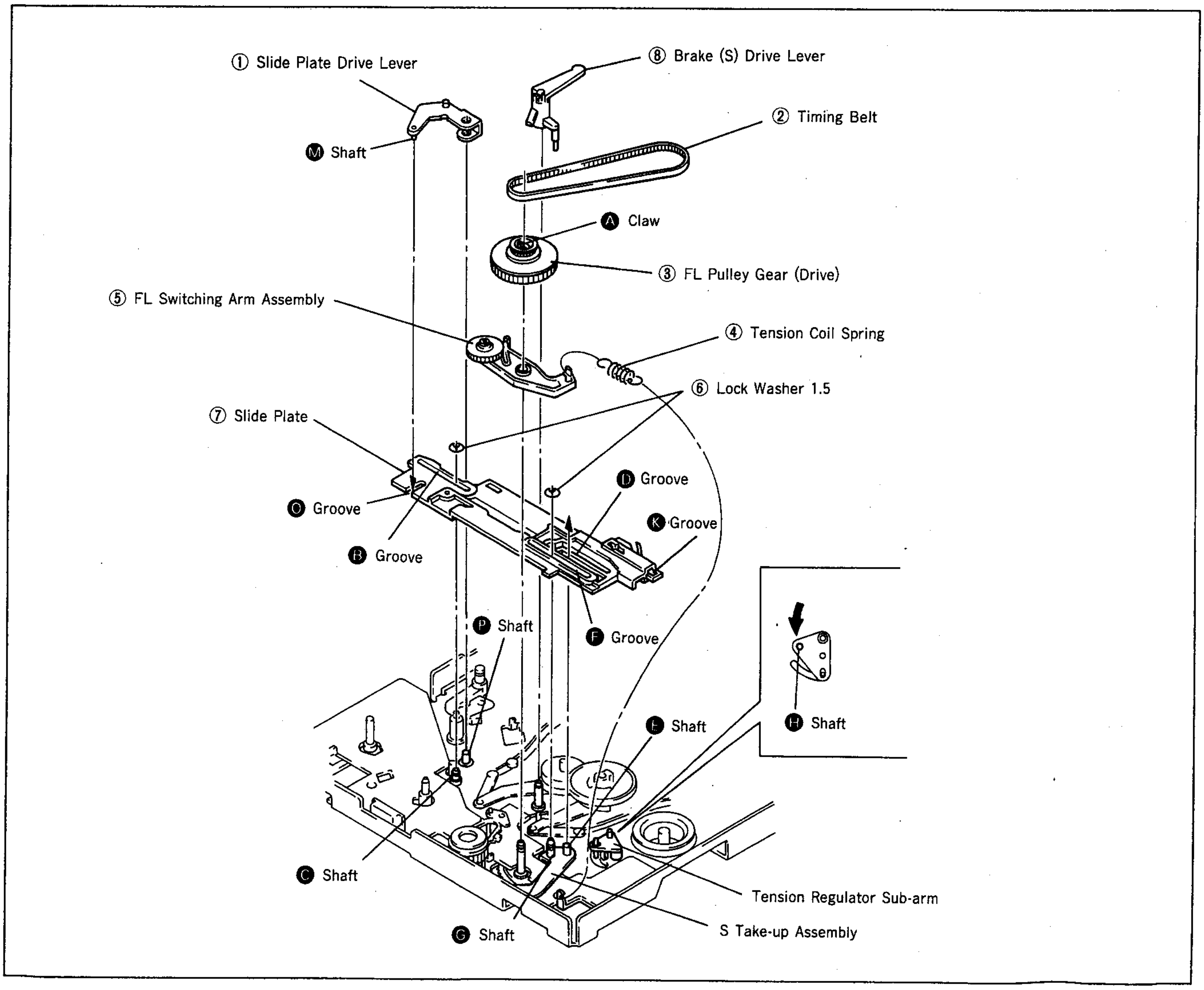

① Slide Plate Drive Lever
⑧ Brake (S) Drive Lever
② Timing Belt
🅜 Shaft
🅐 Claw
③ FL Pulley Gear (Drive)
⑤ FL Switching Arm Assembly
④ Tension Coil Spring
⑥ Lock Washer 1.5
⑦ Slide Plate
🅓 Groove
🅞 Groove
🅚 Groove
🅑 Groove
🅟 Shaft
🅕 Groove
🅔 Shaft
🅗 Shaft
🅒 Shaft
Tension Regulator Sub-arm
🅖 Shaft
S Take-up Assembly

Fig. 23

4-18. LOADING GEAR (S) ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 4-15, remove the loading drive lever.
2) Disengage a claw Ⓐ and remove the brake (S) drive lever ①.
3) Remove the coaster leaf spring ②.
4) Disengage a claw Ⓑ and remove the loading gear (S) assembly ③.

2. Mounting

1) Mount the loading gear (S) assembly ③ on the shaft Ⓒ of chassis with its arm engaged with the shaft Ⓓ of coaster.
   At this time, align the portion Ⓔ of loading gear (T) assembly with the portion Ⓕ of loading gear (S) assembly.
2) Mount the coaster leaf spring ②.
3) Mount the brake (S) drive lever ① on the shaft Ⓜ of chassis with its shaft Ⓙ inserted into the portion Ⓖ of brake (S) arm, and the shaft Ⓗ into the groove Ⓚ in loading gear (S) assembly ③.
4) Referring to 4-15, mount the loading drive lever.

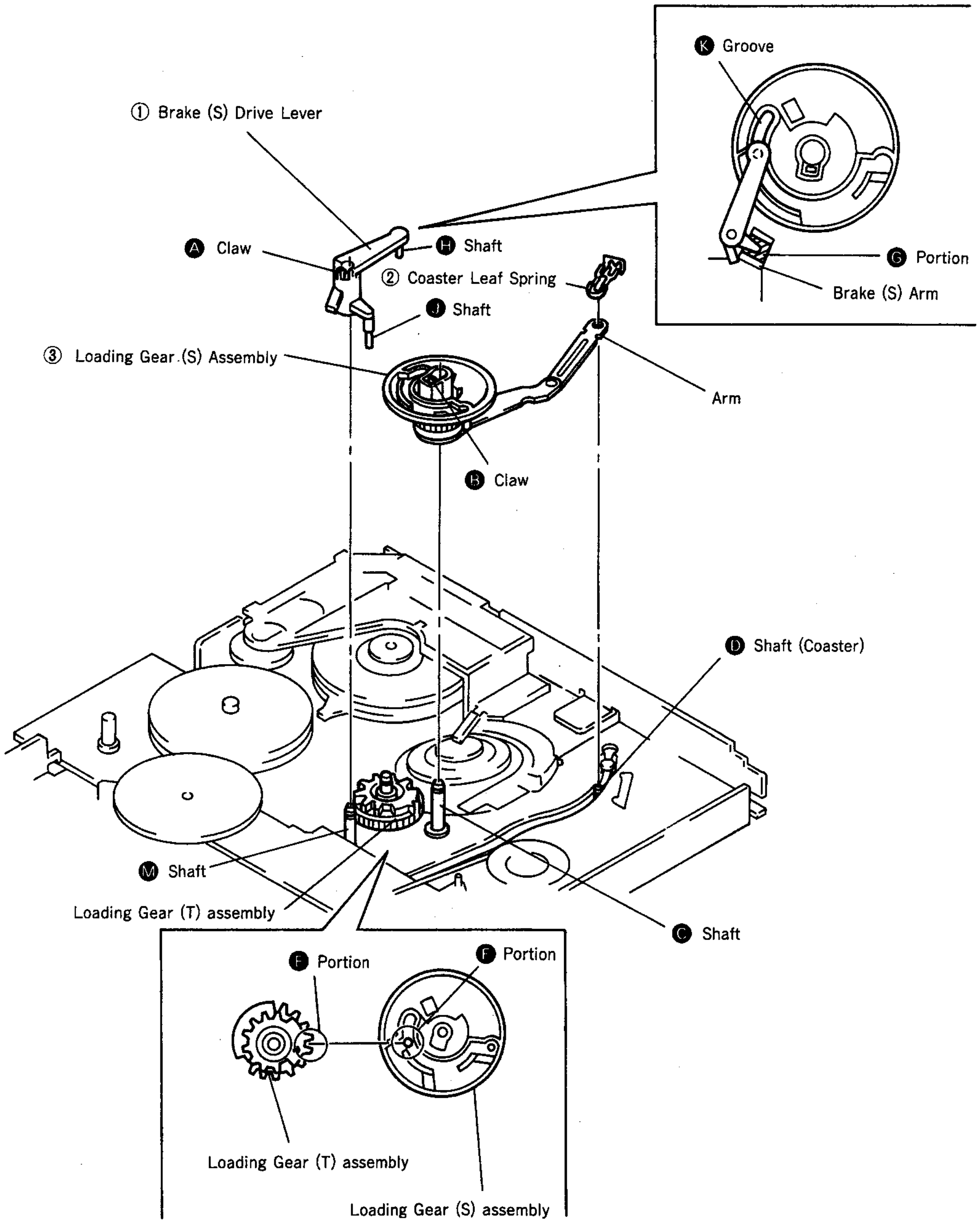

Ⓚ Groove
① Brake (S) Drive Lever
Ⓐ Claw
Ⓗ Shaft
② Coaster Leaf Spring
Ⓙ Shaft
Ⓖ Portion
Brake (S) Arm
③ Loading Gear (S) Assembly
Arm
Ⓑ Claw
Ⓓ Shaft (Coaster)
Ⓜ Shaft
Loading Gear (T) assembly
Ⓒ Shaft
Ⓔ Portion
Ⓕ Portion
Loading Gear (T) assembly
Loading Gear (S) assembly

Fig. 24

4-19. LOADING GEAR (T) ASSEMBLY (Fig. 25)

1. Removal

1) Referring to 4-15, remove the loading drive lever.
2) Referring to 4-18, remove the loading gear (S) assembly.
3) Remove the coaster leaf spring ①, then the loading gear (T) assembly ②.

2. Mounting

1) Mount the loading gear (T) assembly ② on the shaft 🅐 of chassis with its arm engaged with the shaft 🅑 of coaster.
2) Mount the coaster leaf spring ①.
3) Referring to 4-18, mount the loading gear (S) assembly.
4) Referring to 4-15, remove the loading drive lever.

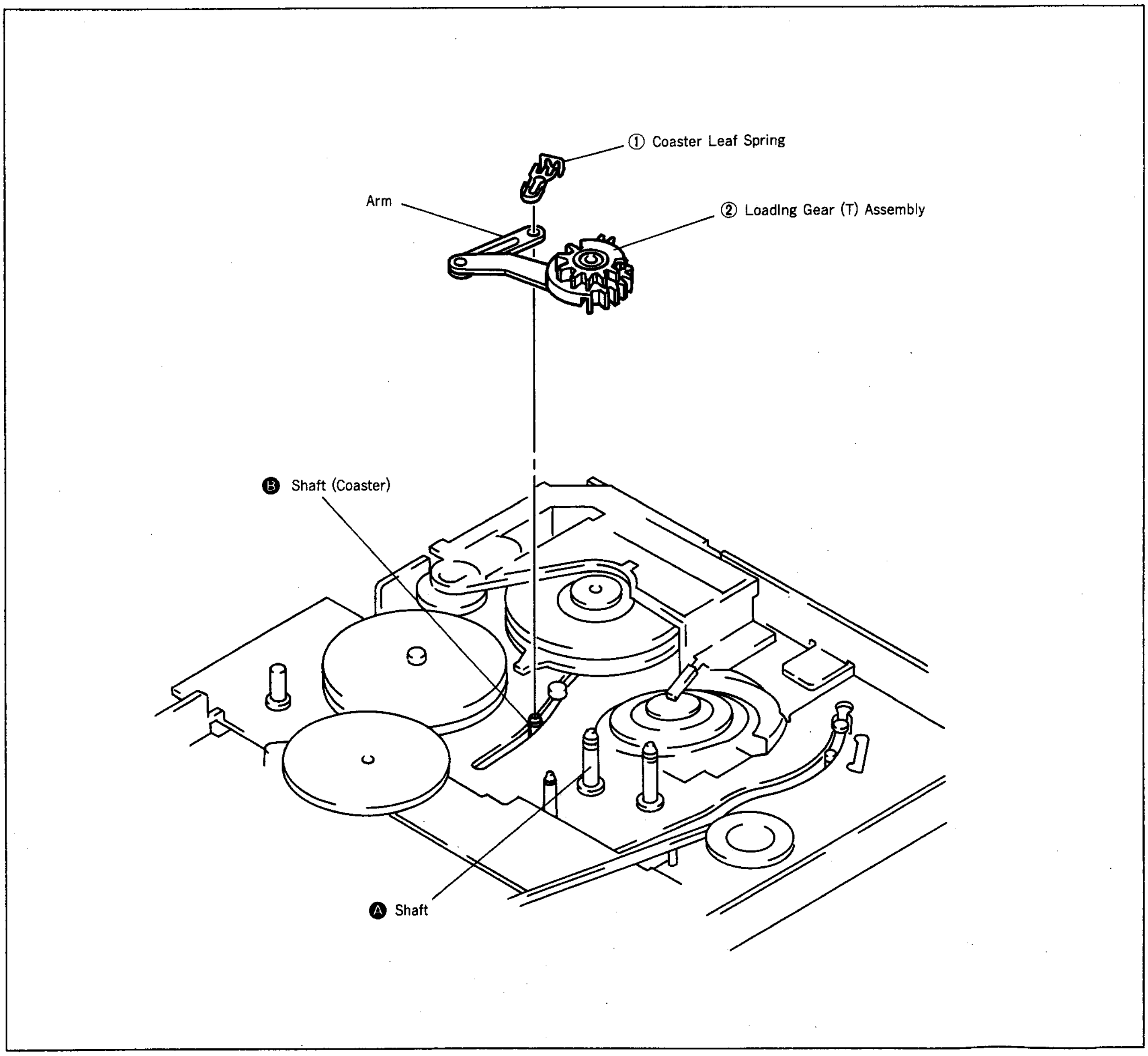

① Coaster Leaf Spring
Arm
② Loading Gear (T) Assembly
🅑 Shaft (Coaster)
🅐 Shaft

Fig. 25

4-20. COASTER (S) (Fig. 26)

1. Removal

1) Referring to 4-2, remove the impedance roller assembly.
2) Remove a screw ①, then the catcher (S) ②.
3) Remove the coaster leaf spring ③, then the coaster (S) ④.

2. Mounting

1) Mount the coaster (S) ④.
2) Mount the catcher (S) ② with its holes inserted into dowels Ⓐ of chassis at two places.
3) Tighten a screw ①.
4) Referring to 4-18 Loading Gear (S) Assembly, mount the coaster leaf spring ③.
5) Referring to 4-2, mount the impedance roller assembly.

4-21. COASTER (T) (Fig. 27)

1. Removal

1) Remove a screw ①, then the catcher (T) ②.
2) Remove the coaster leaf spring ③, then the coaster (T) ④.

2. Mounting

1) Mount the coaster (T) ④.
2) Mount the catcher (T) ② with its holes inserted into dowels Ⓐ of chassis at two places.
3) Referring to 4-19 Loading Gear (T) Assembly, mount the coaster leaf spring ③.

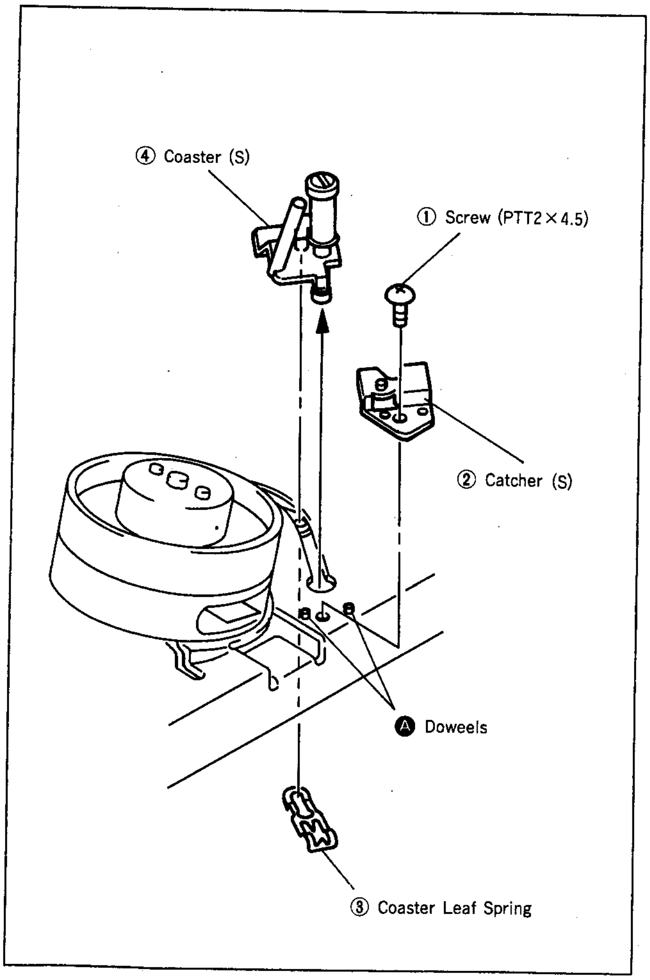

④ Coaster (S)
① Screw (PTT2×4.5)
② Catcher (S)
Ⓐ Doweels
③ Coaster Leaf Spring

Fig. 26

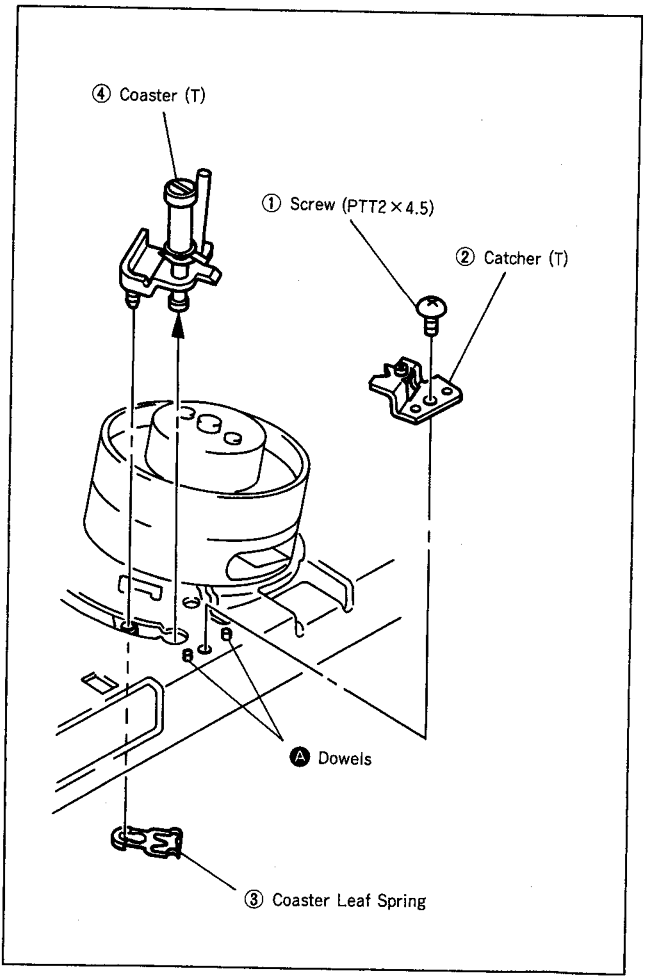

④ Coaster (T)
① Screw (PTT2×4.5)
② Catcher (T)
Ⓐ Dowels
③ Coaster Leaf Spring

Fig. 27

4-22. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws ① (Fig. 28).
2) Mount the jig ② (Ref. No. J-8) with the two supplied screws ③, then screw the attached hexagon socket screws ④ to the jig ②. The rotary upper drum ⑤ will move upward and come off (Fig. 29).

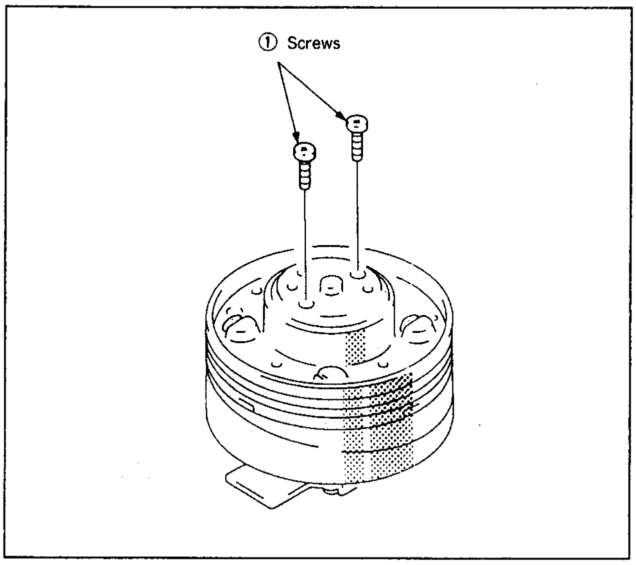


Fig. 28

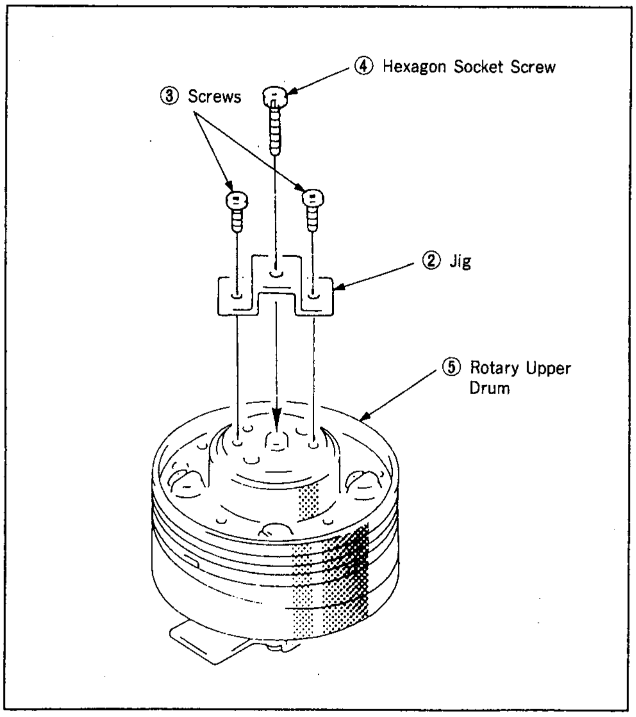


Fig. 29

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ⑤ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ⑥ (Ref. No. J-8) into the drum positioining hole, then set then set the rotary upper drum ⑤ by passing the jig through its positioning hole ⑦. (Fig.30)
3) Remove the jig ⑥ and push down the rotary upper drum ⑤ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws ① alternately (Fig.28).
4) Tighten strongly both two screws ①, and loosen both screws once, then tighten them again (for stable seating).
5) Insert the jig ⑥ into the positioning hole ⑦ again and confirm that it goes in smoothly. If it does not, loosen the two screws ①, repeat step 2) of the Removal paragraph and restart the setting procedure.
6) Tighten the screws ①.

Note : After installing, be sure to perform tape path adjustment as described in section 5.

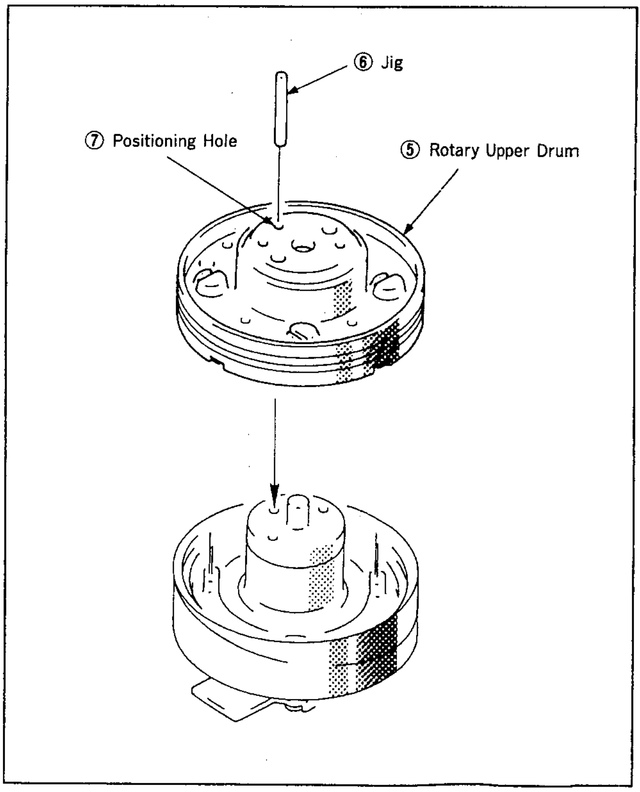


Fig. 30

4-23. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 31)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 5.5 mm. (On the centerline of TG2 guide)
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ①.
5) If No.1 guide is located inside the specified position, shift the tension adjusting base toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-13). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ①.

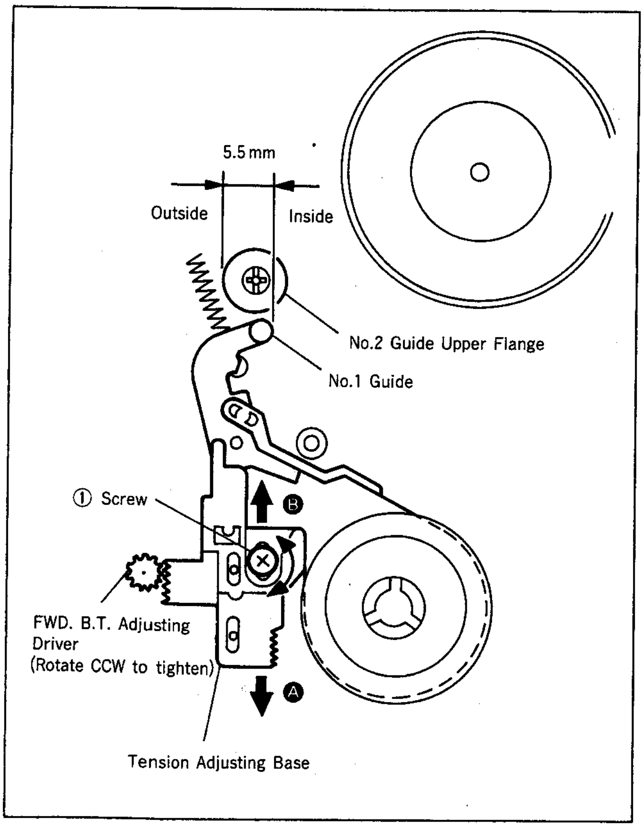

5.5 mm
Outside
Inside
No.2 Guide Upper Flange
No.1 Guide
① Screw
B
FWD. B.T. Adjusting Driver (Rotate CCW to tighten)
A
Tension Adjusting Base

Fig. 31

4-24. FWD BACK TENSION ADJUSTMENT (Fig. 32)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-10).
2) Set the torque cassette (Ref No. J-7).
3) Select the FWD mode, and check that the torque of S reel table is 0.88 ~ 1.17mN·m (9 ~ 12g·cm). If it is out of standard, adjust the tension adjusting arm position.

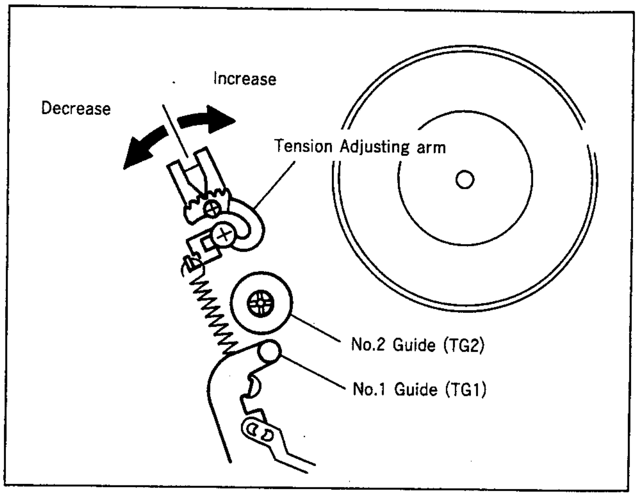

Increase
Decrease
Tension Adjusting arm
No.2 Guide (TG2)
No.1 Guide (TG1)

Fig. 32

4-25. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 0.98 ~ 1.96mN·m (10 ~ 20g·cm).
3) Select the RVS mode, and check that the torque fluctuation center of S reel table is 1.77 ~ 2.75mN·m (18 ~ 28g·cm).
4) Select the REV mode, and check that the torque of T reeltable is 0.98 ~ 1.96mN·m (10 ~ 20g·cm).
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4-26. FL WORM WHEEL (Fig. 33)

1. Removal

1) Disengage tabs 🅐 at four places and remove the gear cover ①.
2) Remove the drive gear ②, then the FL worm wheel ③.

2. Mounting

1) Mount the FL worm wheel ③.
2) Meet a hole 🅑 in drive arm (T) on right side with a hole in chassis, and also a hole 🅒 in FL worm wheel ③ with a hole in side plate.
   Meet a hole 🅓 in drive gear ② with a hole in side plate.
   Meeting respective holes, mount the drive gear ②.
3) Mount the gear cover ①.

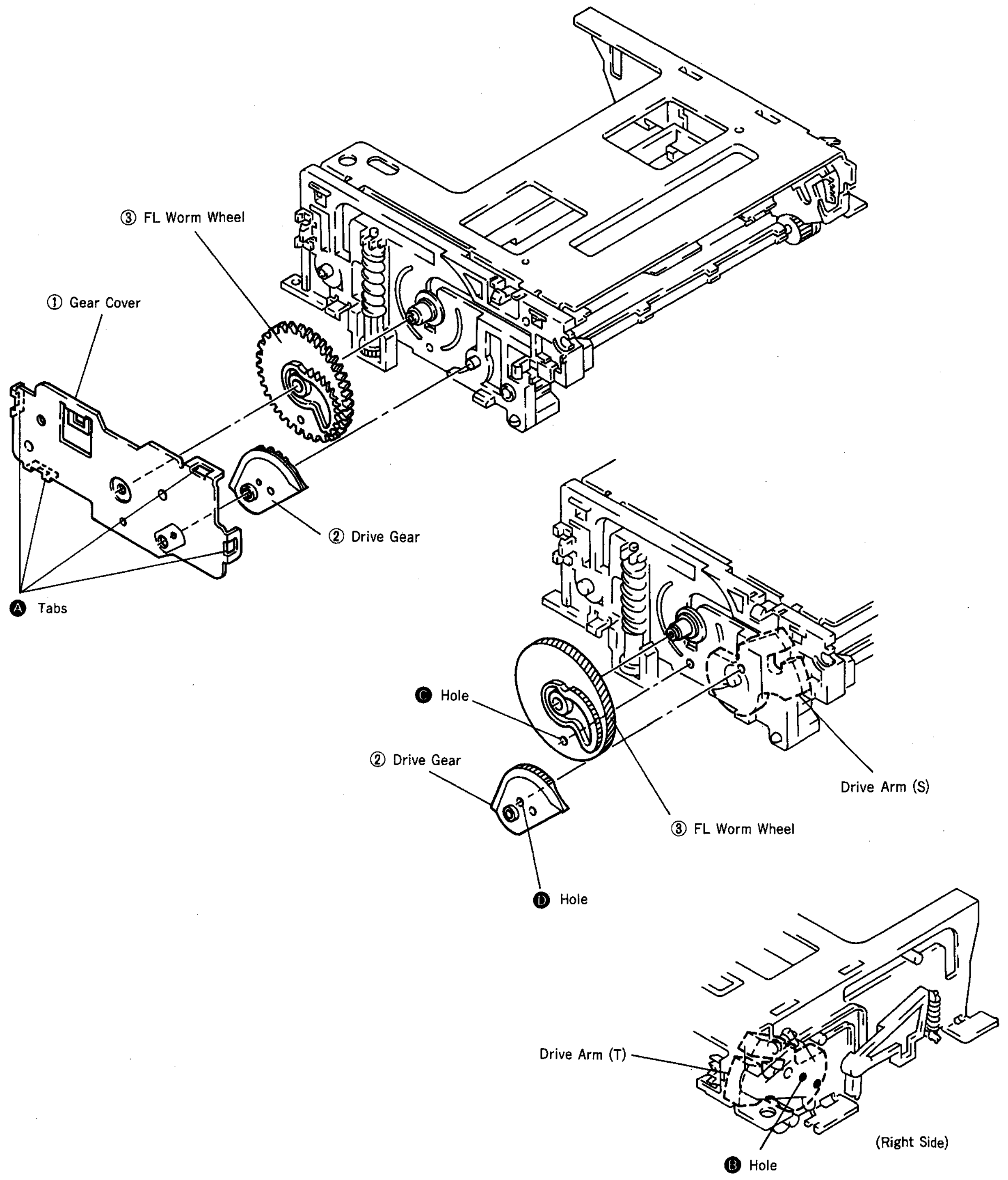

③ FL Worm Wheel
① Gear Cover
② Drive Gear
🅐 Tabs
🅒 Hole
② Drive Gear
Drive Arm (S)
③ FL Worm Wheel
🅓 Hole
Drive Arm (T)
(Right Side)
🅑 Hole

Fig. 33

5. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the F mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No. J-10). So, fine tracking adjustment can be easily done.
Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

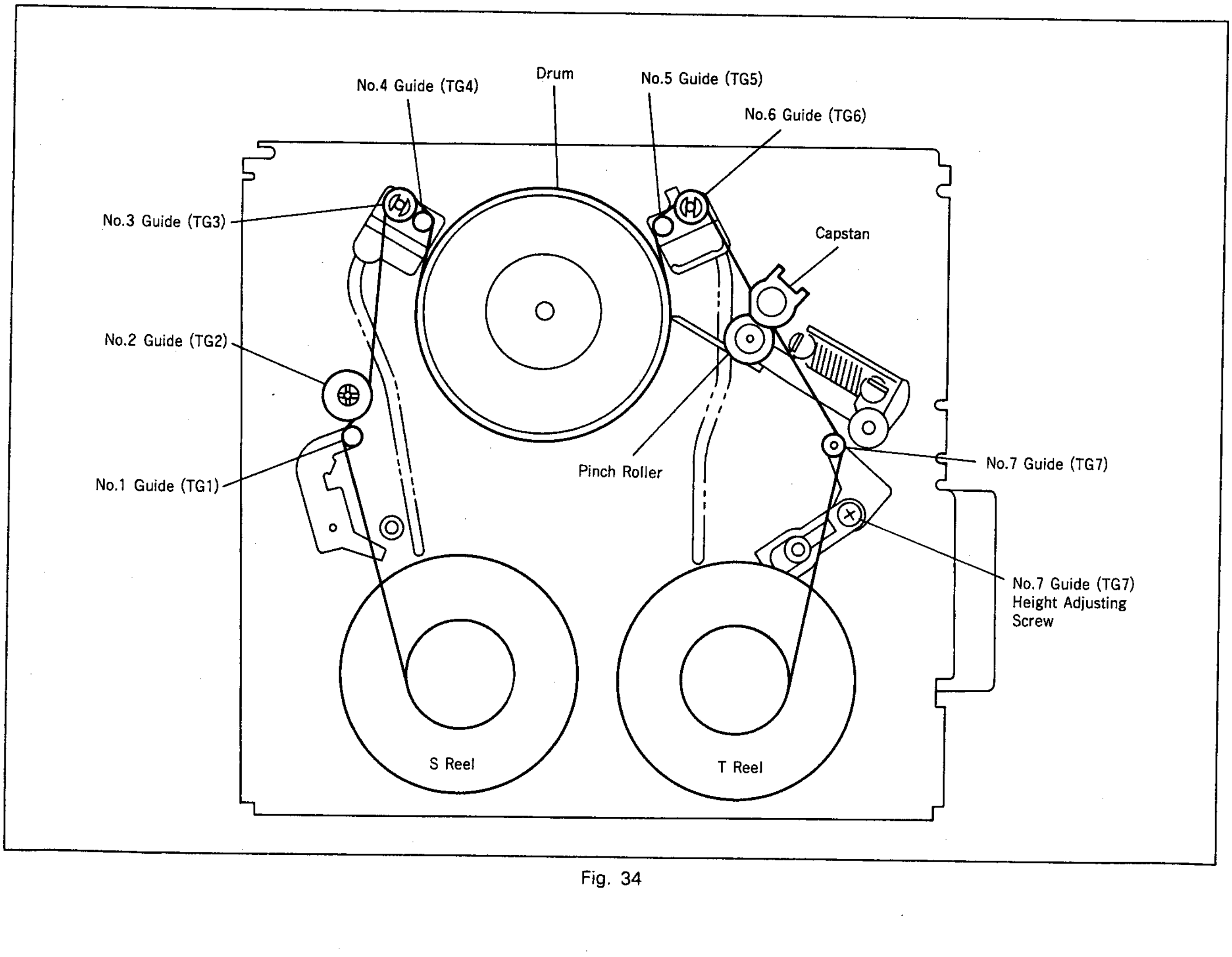
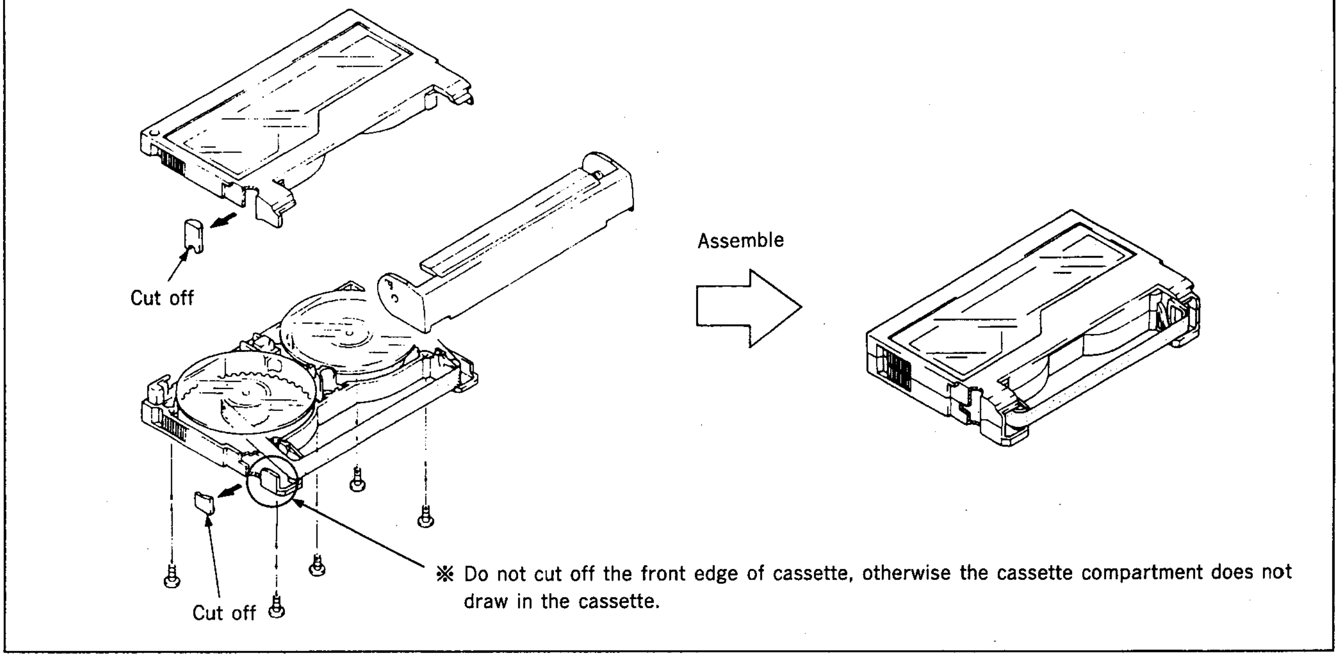

No.4 Guide (TG4)
Drum
No.5 Guide (TG5)
No.6 Guide (TG6)
No.3 Guide (TG3)
Capstan
No.2 Guide (TG2)
Pinch Roller
No.7 Guide (TG7)
No.1 Guide (TG1)
No.7 Guide (TG7) Height Adjusting Screw
S Reel
T Reel

Fig. 34

[Note on Adjustment of No.7 Guide (TG7)]

The height adjustment screw for No.7 guide (TG7) is located at some distance from the guide (refer to Fig.42).

Therefore, when performing section 5-4. No.7 Guide (TG7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.



※ Do not cut off the front edge of cassette, otherwise the cassette compartment does not draw in the cassette.

Fig. 35

5-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
4) Play back a tracking alignment tape (NTSC : WR5-1NP, or PAL : WR5-1CP).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 36 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 36 ⓑ and ⓒ.

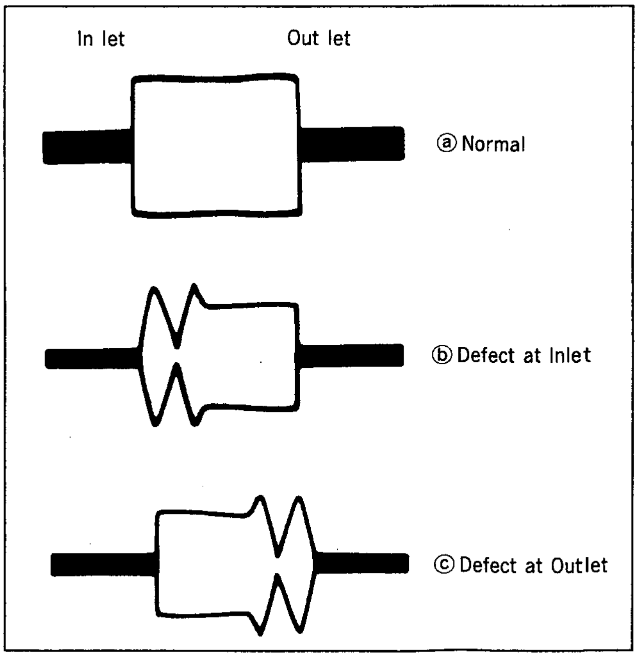


Fig. 36

5-2. TRACKING ADJUSTMENT (Fig. 37, 38)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG3) lock screw ① and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG3) lock screw ① to lock the No.3 guide.
4) Loosen the No.6 guide (TG6) lock screw ② and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG6) lock screw ② to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

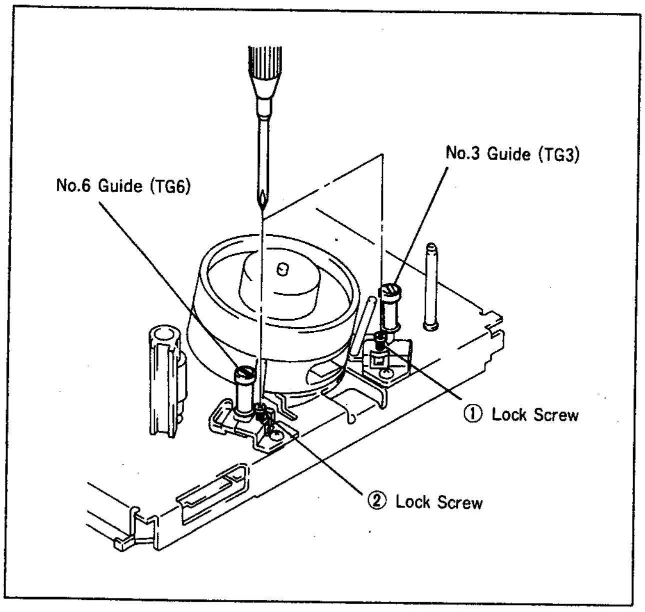

No.3 Guide (TG3)
No.6 Guide (TG6)
① Lock Screw
② Lock Screw

Fig. 37

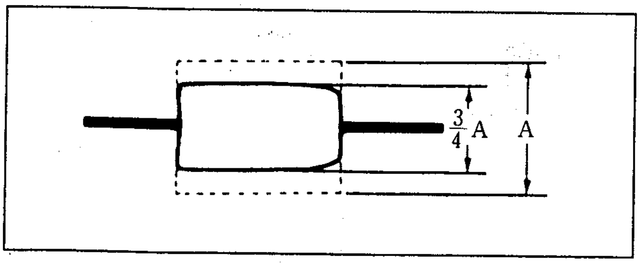


Fig. 38

5-3. No.2 GUIDE (TG2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

5-3-1. No. 2 GUIDE (TG2) HEIGHT PRESETTING (Fig. 39)

1) Rotating the TG2 upper flange, adjust the height from top surface of mechanical chassis to top surface of TG2 upper flange to 22.12mm.

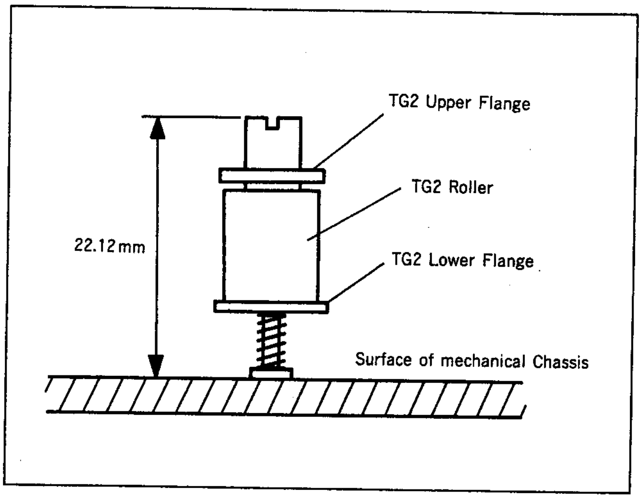

TG2 Upper Flange
TG2 Roller
TG2 Lower Flange
22.12mm
Surface of mechanical Chassis

Fig. 39

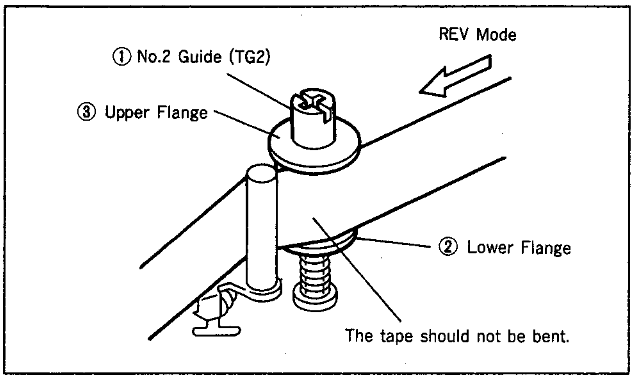
[Reference]

This F mechanism is equipped with four adjustable guides (TG2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG7	Raise	Clockwese
	Lower	Counterclockwise

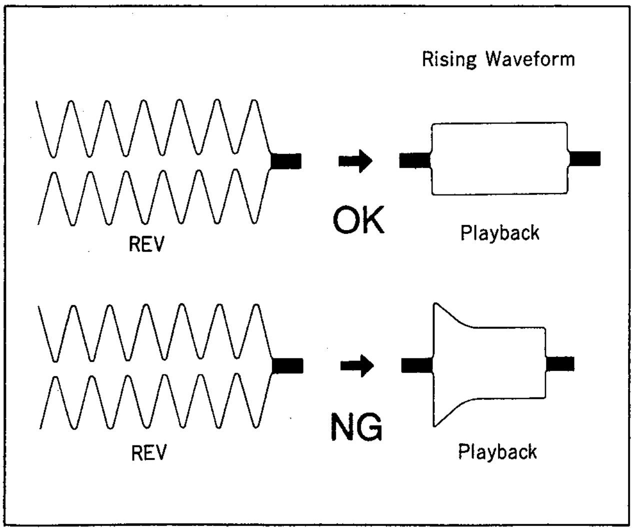
5-3-2. No. 2 GUIDE (TG2) ADJUSTMENT (Fig. 40, 41)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ② of the No.2 guide (TG2) ① (Fig. 40). If it is, turn the upper flange ③ of the No.2 guide (TG2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 5-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 41), turn the upper flange ③ of the No. 2 guide (TG2) ① 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).



① No.2 Guide (TG2)
REV Mode
③ Upper Flange
② Lower Flange
The tape should not be bent.

Fig. 40



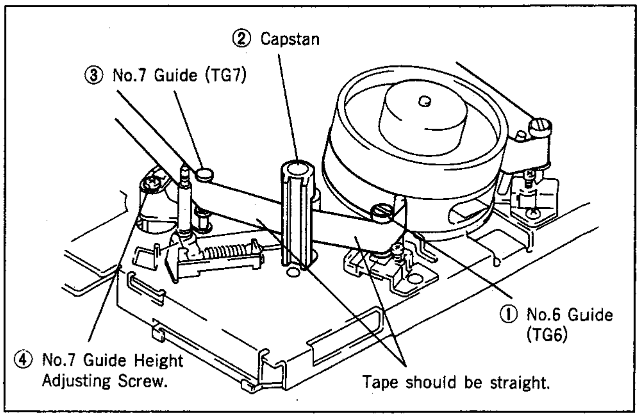
Rising Waveform
REV
OK
Playback
REV
NG
Playback

Fig. 41

5-4. No.7 GUIDE (TG7) ADJUSTMENT (Fig. 42)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 35).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG6) ① and the capstan ②. If it is, turn the hight adjusting screw ④of the No.7 guide (TG7) ③ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ② and the No.7 guide (TG7) ③ (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the hight adjusting screw ④ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG6) ① and the capstan ② is 0.3mm or less, adjustment can be considered completed.

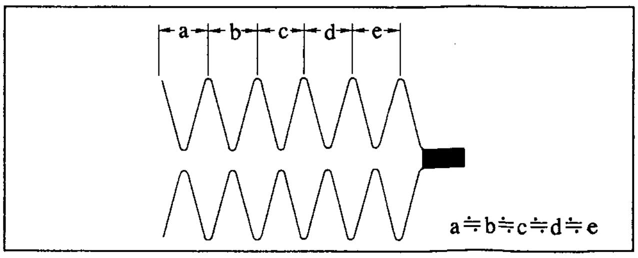


② Capstan
③ No.7 Guide (TG7)
① No.6 Guide (TG6)
④ No.7 Guide Height Adjusting Screw.
Tape should be straight.

Fig. 42

5-5. CUE AND REV WAVEFORM CHECK (Fig. 43)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 43). In case pitch is not constant, perform section 5-2.Tracking Fine Adjustment and section 5-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 43).
   Otherwise, perform section 5-2 Tracking Fine Adjustment.



a
b
c
d
e
a≒b≒c≒d≒e

Fig. 43

5-6. CHECK AFTER ADJUSTMENT

5-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 44).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (Fig. 45).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

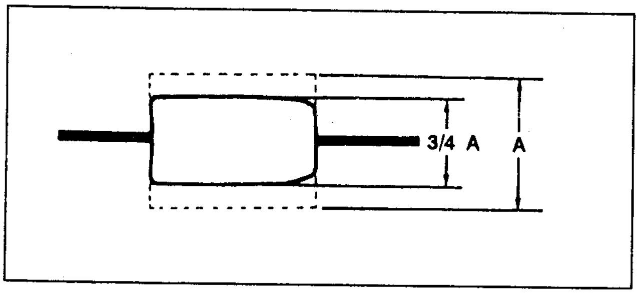
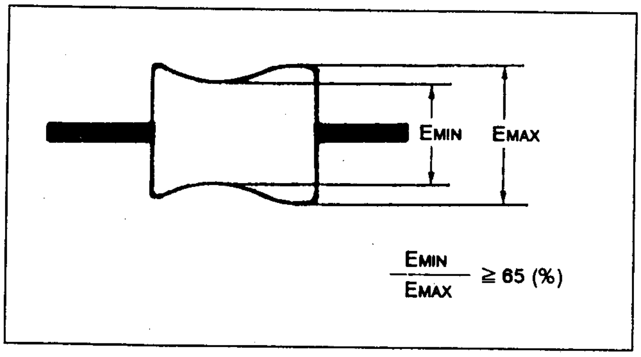
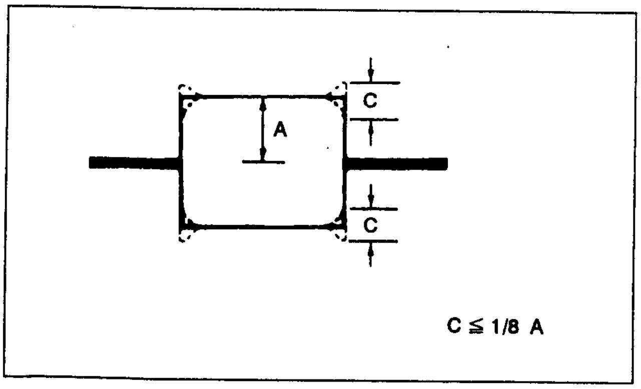


Fig. 44



$$\frac{E_{MIN}}{E_{MAX}} \geqq 65\ (\%)$$

Fig. 45



$C \leqq 1/8\ A$

Fig. 46

5-6-2. RISING CHECK (Fig. 47)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

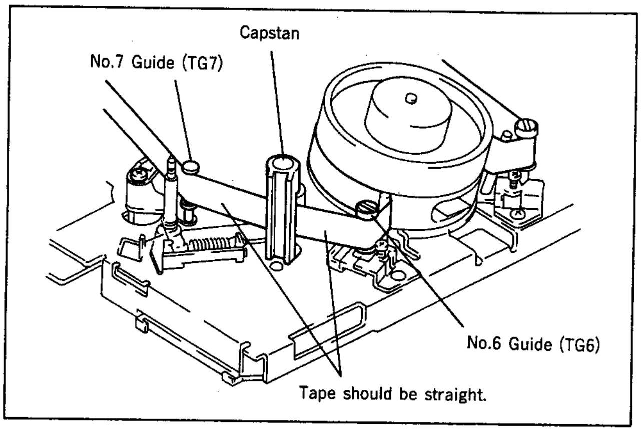

Capstan
No.7 Guide (TG7)
No.6 Guide (TG6)
Tape should be straight.

Fig. 47

5-6-3. TAPE PATH CHECK (Fig. 48)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

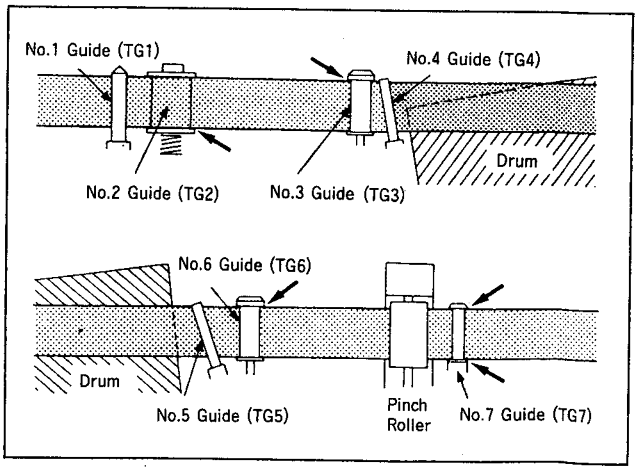

No.1 Guide (TG1)
No.4 Guide (TG4)
Drum
No.2 Guide (TG2)
No.3 Guide (TG3)
No.6 Guide (TG6)
Drum
No.5 Guide (TG5)
Pinch Roller
No.7 Guide (TG7)

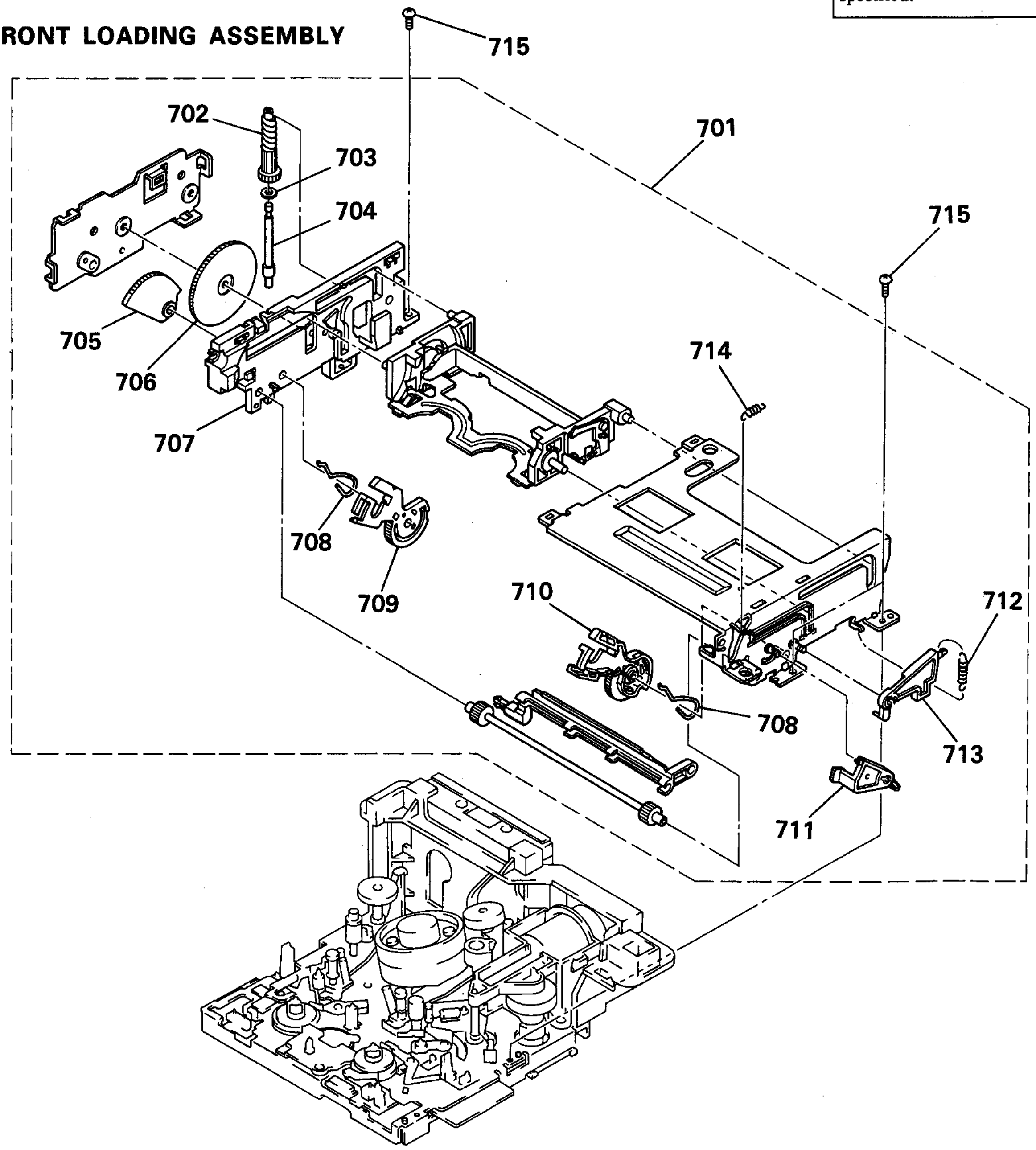
Fig. 48

SECTION 6
EXPLODED VIEWS

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (#mark) list is given in the last of this parts list.

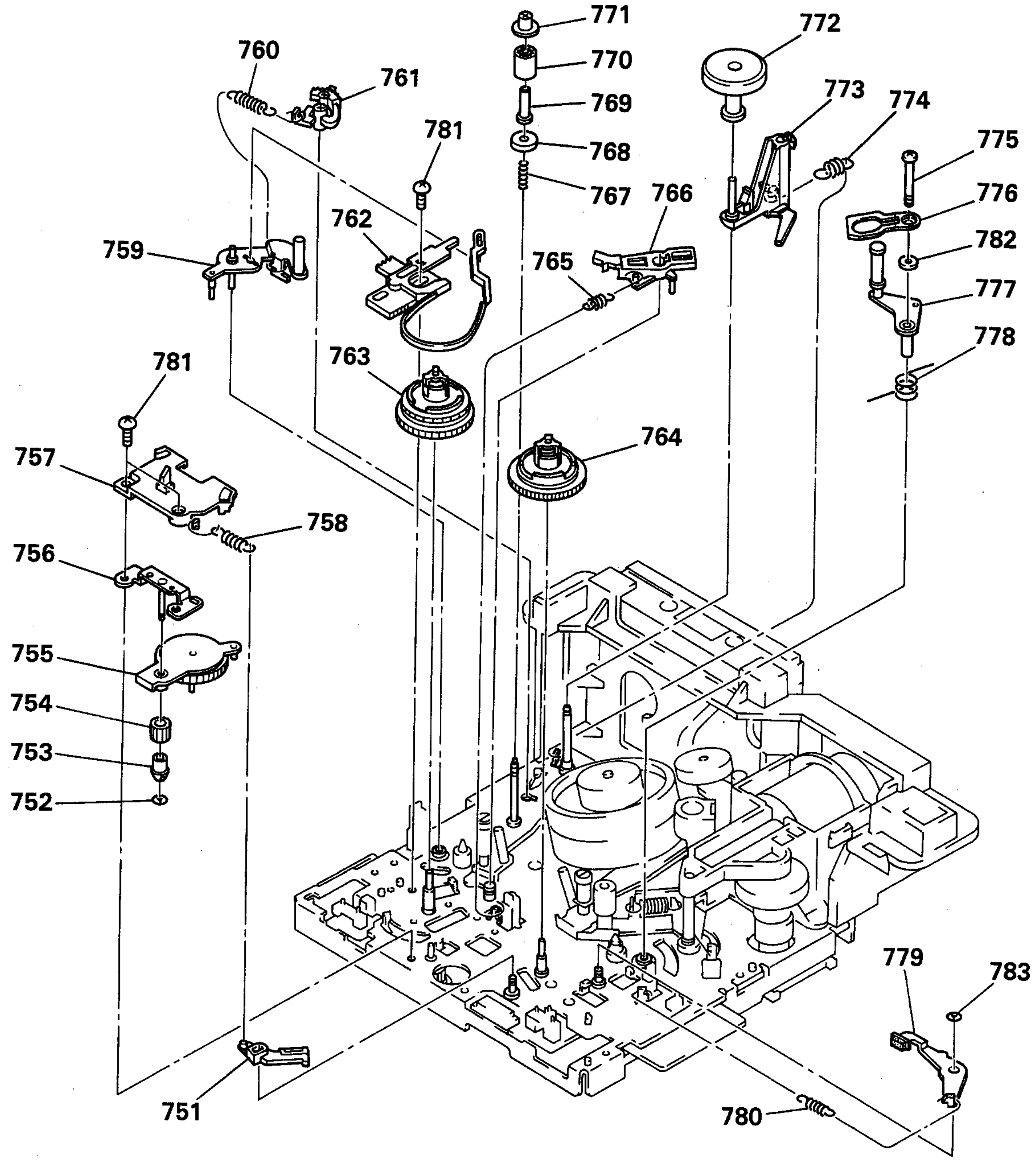
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

6-1. FRONT LOADING ASSEMBLY



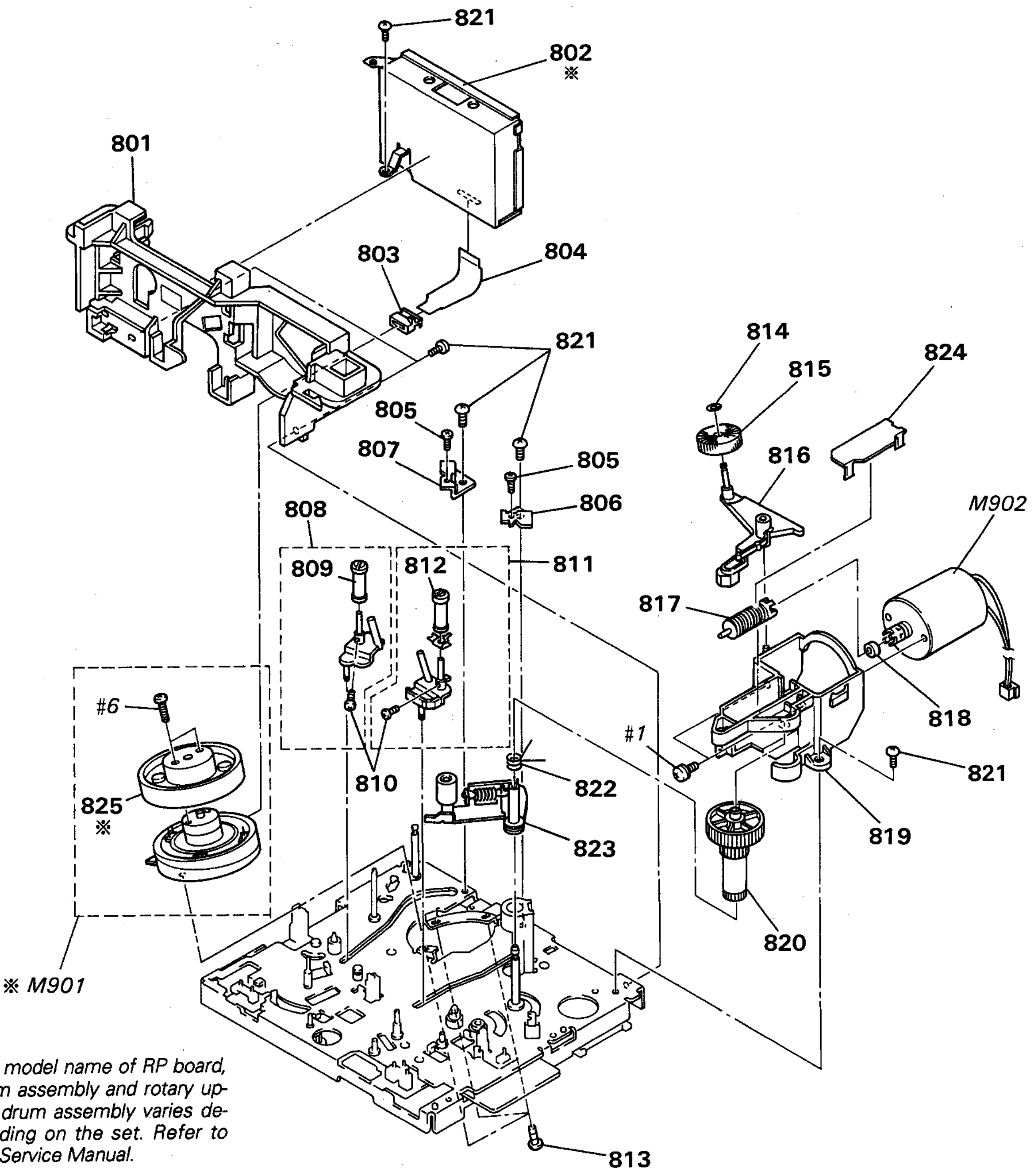
Ref.No.	Part No.	Description	Remark
701	A-7091-941-A	FL BLOCK ASSY	
702	3-954-028-01	GEAR, FL WORM	
703	3-738-212-11	RETAINER, THRUST, REEL TABLE	
*704	3-954-029-01	SHAFT, FL WORM GEAR	
705	3-954-020-01	GEAR, DRIVING	
706	3-954-019-01	WHEEL, FL WORM	
*707	3-954-032-01	PLATE (S), SIDE	
708	3-954-042-01	SPRING, PRESS	
709	3-954-034-01	ARM (S), DRIVING	
710	3-954-033-01	ARM (T), DRIVING	
*711	3-954-041-01	ARM, DOOR SWITCHING	
712	3-954-043-01	SPRING, TENSION	
*713	3-954-040-01	ARM, CASSETTE IN SWICH	
714	3-954-044-01	SPRING, TENSION	
715	3-732-817-01	SCREW (2X4.5), TAPPING	

6-2. MD CHASSIS ASSEMBLY (1)



Ref.No.	Part No.	Description	Remark
751	X-3943-111-1	BRAKE (T) ASSY, SOFT	
752	3-726-829-01	WASHER, STOPPER	
753	3-954-321-01	BEARING, PENDULUM DRIVING	
754	3-954-059-01	GEAR, PENDULUM DRIVING	
755	X-3942-951-1	GEAR ASSY, PENDULUM	
756	X-3943-162-1	BASE ASSY, PENDULUM	
*757	3-954-063-01	PLATE, RELEASE, REEL LOCK	
758	3-955-142-01	SPRING, TENSION	
759	X-3942-955-1	TENSION REGULATOR ASSY	
760	3-954-074-01	SPRING, TENSION	
761	3-954-103-01	ARM, TENSION ADJUSTMENT	
762	X-3942-956-1	BAND ASSY, TENSION REGULATOR	
763	X-3942-954-1	TABLE (S) ASSY, REEL	
764	X-3942-953-1	TABLE (T) ASSY, REEL	
765	3-954-085-01	SPRING, TENSION	
766	3-954-071-01	ARM, BRAKE (S)	
767	3-954-001-01	SPRING, COMPRESSION	
768	3-726-882-02	FLANGE, LOWER, TG2	
769	3-726-885-01	SLEEVE, TG2	
770	3-726-883-31	ROLLER, TG2	
771	3-726-884-01	FLANGE, UPPER, TG2	
772	3-954-282-01	ROLLER (M)	
773	X-3943-015-1	BASE ASSY, ROLLER	
774	3-954-284-01	SPRING, TENSION	
775	3-954-096-01	SCREW, TG7 HEIGHT ADJUSTMENT	
776	3-954-093-01	SPACER, TG7	
777	X-3942-958-1	ARM ASSY, TG7	
778	3-954-003-01	SPRING (TG7), TORSION	
779	X-3943-161-1	BRAKE (T) ASSY	
780	3-953-978-01	SPRING, TENSION	
781	3-732-817-01	SCREW (2X4.5), TAPPING	
782	3-738-212-11	RETAINER, THRUST, REEL TABLE	
783	3-669-465-00	WASHER (1.5), STOPPER	

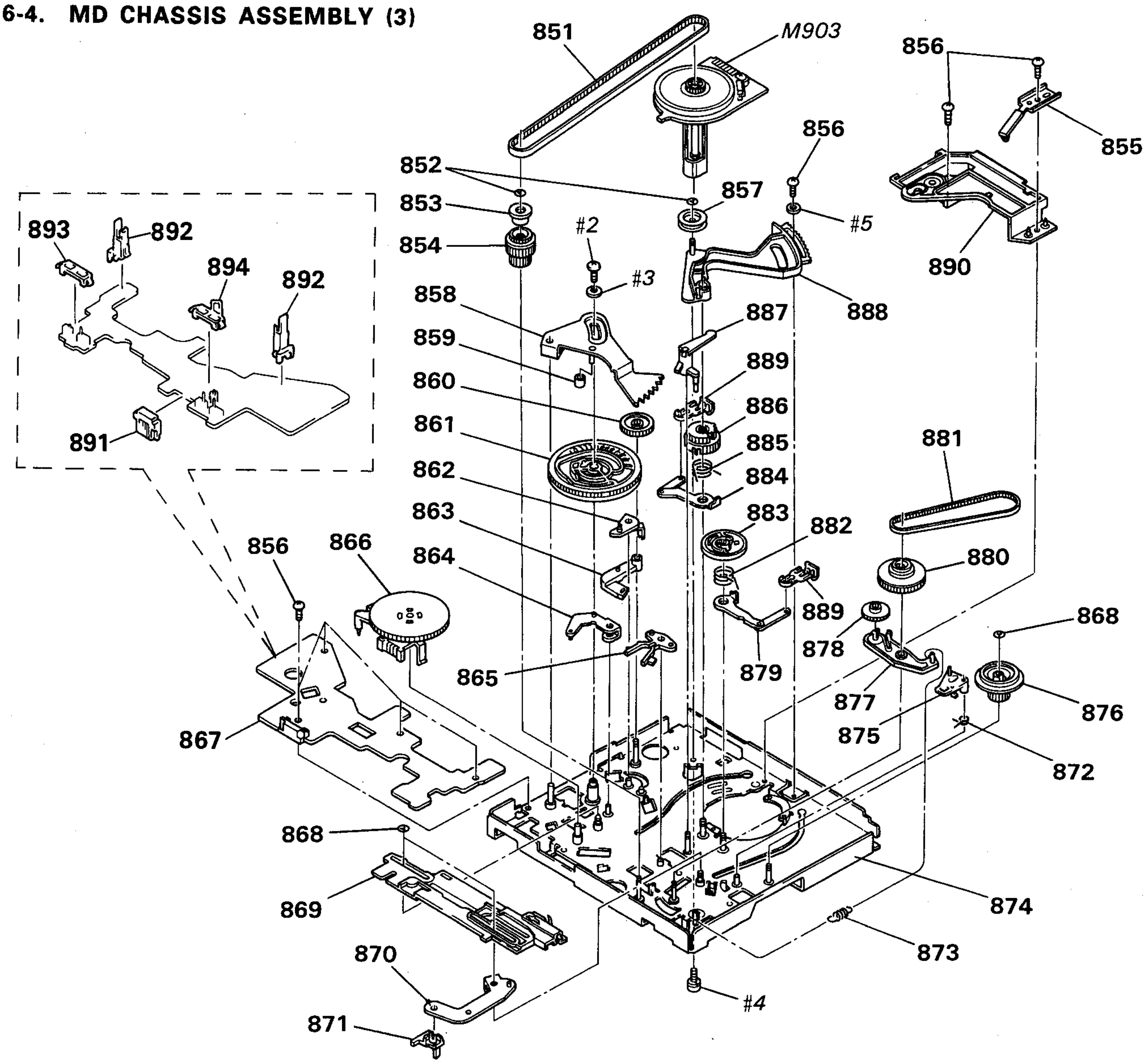
6-3. MD CHASSIS ASSEMBLY (2)


821
802
※
801
803
804
821
814
815
824
805
807
805
816
806
M902
808
809
812
811
817
#6
818
#1
810
822
821
825
※
819
823
820
※ M901
813

※ The model name of RP board, drum assembly and rotary upper drum assembly varies depending on the set. Refer to the Service Manual.

Ref.No.	Part No.	Description	Remark
*801	3-955-623-01	FRAME, RP	
*802	※	RP BOARD, COMPLETE	
803	1-691-471-11	CONNECTOR, TRANSLATION 11P	
804	1-649-565-11	FP-696 FLEXIBLE BOARD	
805	3-954-285-01	SCREW (M1.4X0.2)	
806	3-954-091-01	CATCHER (T)	
807	3-954-090-01	CATCHER (S)	
808	A-7040-338-A	COASTER (S) BLOCK ASSY	
809	X-3941-755-1	ROLLER ASSY (2), TG3	
810	3-947-504-01	SCREW (M1.2X2)	
811	A-7040-339-A	COASTER (T) BLOCK ASSY	
812	X-3941-756-1	ROLLER ASSY (2), TG6	
813	3-686-493-01	SCREW (M2X5), P1	
814	3-321-393-01	WASHER, STOPPER	
815	X-3943-192-1	ROLLER ASSY, HC	
816	X-3942-947-1	ARM ASSY, HC	
817	3-733-395-01	GEAR (CAM), WORM	
818	3-696-388-01	RUBBER, JOINT	
819	3-954-024-01	HOLDER, MOTOR	
820	3-954-023-01	WHEEL, CAM WORM	
821	3-732-817-01	SCREW (2X4.5), TAPPING	
822	3-954-105-01	SPRING (PINCH DRIVING)	
823	X-3942-945-1	ARM ASSY, PINCH	
824	3-958-047-02	MOTOR HOLDER COVER	
825	※	DRUM, UPPER, ROTARY	
M901	※	DRUM ASSY	
M902	X-3942-946-1	MOTOR ASSY, CAM	

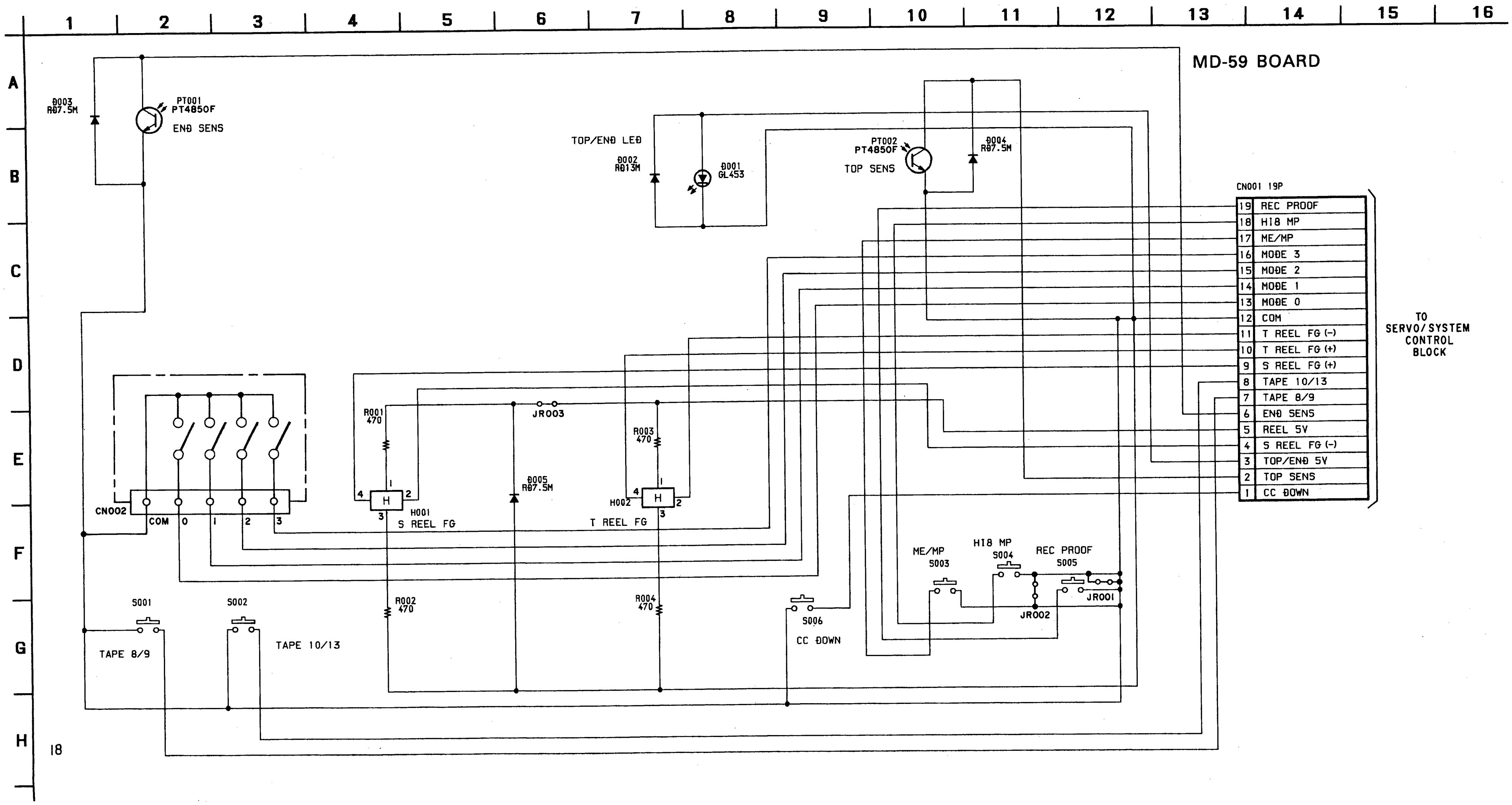
6-4. MD CHASSIS ASSEMBLY (3)


851
M903
856
855
856
852
853
857
#5
854
#2
890
#3
893
892
894
892
858
887
888
859
889
860
886
861
885
881
891
862
884
883
863
882
856
866
880
864
889
868
878
879
865
877
876
867
875
872
868
874
869
873
870
#4
871

Ref.No.	Part No.	Description	Remark
851	3-953-986-01	BELT, TIMING	
852	3-726-829-01	WASHER, STOPPER	
853	3-954-102-02	FLANGE, REEL RELAY	
854	3-954-061-01	GEAR, REEL RELAY	
855	X-3942-960-1	GROUND ASSY, SHAFT	
856	3-732-817-01	SCREW (2X4.5), TAPPING	
857	X-3943-016-1	PULLEY ASSY, BELT	
*858	3-954-014-01	LEVER, LOADING DRIVING	
859	3-954-323-01	ROLLER, LOADING	
860	3-954-015-01	GEAR, CAM RELAY	
861	3-954-050-01	CAM, MAIN	
*862	3-954-009-01	LEVER, PINCH DRIVING	
863	3-954-016-01	LEVER, TG7 DRIVING	
*864	3-954-007-01	LEVER, SLIDE PLATE DRIVING	
865	3-953-973-01	ARM, PENDULUM COMPULSION	
866	1-692-498-11	SWITCH, ROTARY	
*867	1-648-300-11	MD-59 BOARD	
868	3-669-465-00	WASHER (1.5), STOPPER	
869	3-953-972-01	PLATE, SLIDE	
*870	3-953-974-01	ARM, S TAKE-UP	
871	3-953-975-01	CLAW, S TAKE-UP	
872	3-956-366-01	SPRING, TORSION	
873	3-953-982-01	SPRING, TENSION	
*874	X-3942-952-1	CHASSIS ASSY, MECHANICAL	
875	3-954-100-01	ARM, TENSION REGULATOR SUB	
876	3-953-983-01	GEAR, FL PULLEY	
877	3-953-979-01	ARM, FL SELECTION	
878	3-953-980-01	GEAR, FL SELECTION	
879	X-3942-949-1	ARM (S) ASSY, LOADING	
880	3-953-981-01	GEAR (DRIVING), FL PULLEY	
881	3-954-079-01	BELT (FL), TIMING	
882	3-953-998-01	SPRING (S), TORSION	
883	3-953-991-01	GEAR (S), LOADING	
884	X-3942-948-1	ARM (T) ASSY, LOADING	
885	3-954-000-01	SPRING (T), TORSION	
886	3-953-992-01	GEAR (T), LOADING	
887	3-954-072-01	LEVER, BRAKE (S) DRIVING	
888	X-3942-962-1	BASE ASSY, PULLEY	
889	3-956-649-01	SPRING, LEAF, COASTER	
*890	3-954-049-01	RETAINER, WORM WHEET	
891	1-750-620-11	CONNECTOR (MM8 MD)	
892	3-953-985-01	HOLDER, ST SENSOR	
893	3-954-638-01	HOLDER (S), PUSH SWITCH	
894	3-954-639-01	HOLDER (T), PUSH SWITCH	
M903	8-835-499-01	MOTOR, DC SCE-0501A	

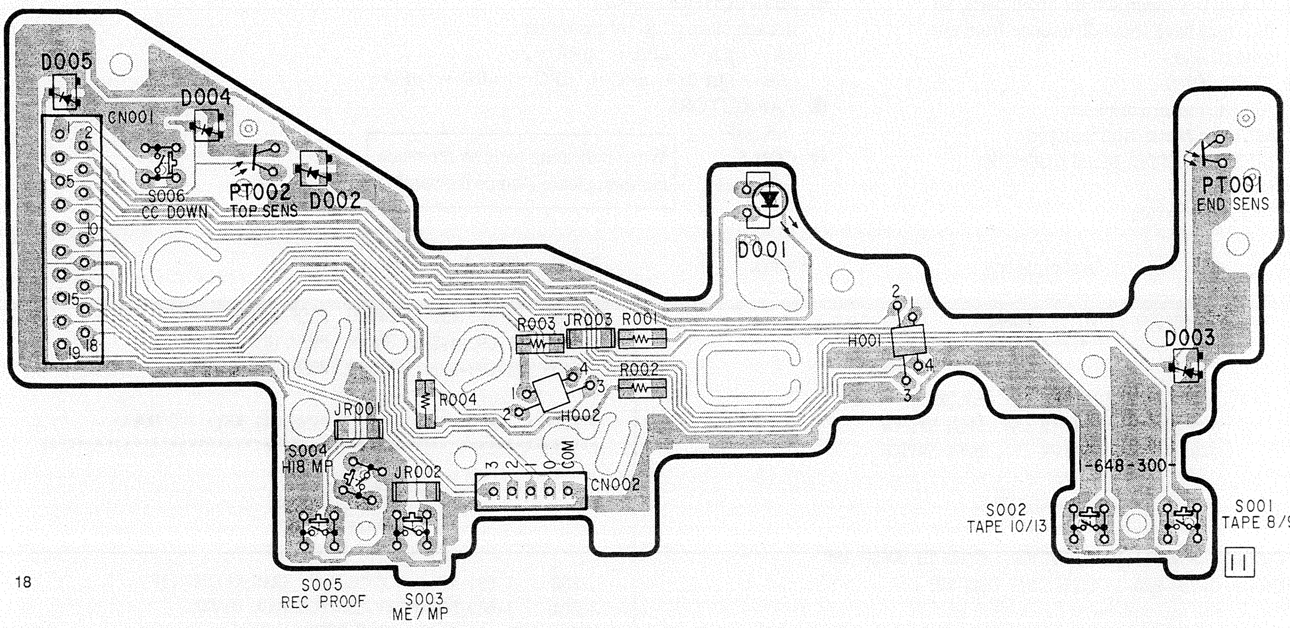
SECTION 7
DIAGRAMAS

SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
MD-59 BOARD
D003
RD7.5M
PT001
PT4850F
END SENS
TOP/END LED
D002
RD13M
D001
GL453
PT002
PT4850F
TOP SENS
D004
RD7.5M
CN001 19P
19 REC PROOF
18 H18 MP
17 ME/MP
16 MODE 3
15 MODE 2
14 MODE 1
13 MODE 0
12 COM
11 T REEL FG (-)
10 T REEL FG (+)
9 S REEL FG (+)
8 TAPE 10/13
7 TAPE 8/9
6 END SENS
5 REEL 5V
4 S REEL FG (-)
3 TOP/END 5V
2 TOP SENS
1 CC DOWN
TO SERVO/SYSTEM CONTROL BLOCK
R001
470
JR003
R003
470
D005
RD7.5M
H001
S REEL FG
H002
T REEL FG
CN002
COM
0
1
2
3
H
R002
470
R004
470
S001
TAPE 8/9
S002
TAPE 10/13
S006
CC DOWN
ME/MP
S003
H18 MP
S004
REC PROOF
S005
JR001
JR002

PRINTED WIRING BOARD

MD-59 BOARD


D005
CN001
1
2
5
10
15
18
19
D004
S006
CC DOWN
PT002
TOP SENS
D002
D001
PT001
END SENS
R003
JR003
R001
R002
H001
H002
R004
JR001
S004
HI8 MP
JR002
3 2 1 0 COM
CN002
D003
-648-300-
S002
TAPE 10/13
S001
TAPE 8/9
S005
REC PROOF
S003
ME / MP
11

18

SECTION 8

ELECTRICAL PARTS LIST

MD-59

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "＊" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ, for example:
  uA··· : µA···, uPA··· : µPA···,
  uPB··· : µPB···, uPC··· : µPC···, uPD··· : µPD···
- CAPACITORS
  uF : µF
- COILS
  uH : µH

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description	Remark
＊	1-648-300-11	MD-59 BOARD ************	
	3-953-985-01	HOLDER, ST SENSOR	
	3-954-638-01	HOLDER (S), PUSH SWITCH	
	3-954-639-01	HOLDER (T), PUSH SWITCH	
		< CONNECTOR >	
CN001	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
＊CN002	1-750-620-11	CONNECTOR (MM8 MD)	
		< DIODE >	
D001	8-719-988-42	DIODE GL453S	
D002	8-719-106-79	DIODE RD13M-B1	
D003	8-719-106-23	DIODE RD7.5M-B2	
D004	8-719-106-23	DIODE RD7.5M-B2	
D005	8-719-106-23	DIODE RD7.5M-B2	
		< HOLE ELEMENT >	
H001	1-808-118-11	ELEMENT, HALL HW-300A	
H002	1-808-118-11	ELEMENT, HALL HW/300A	
		< JUMPER RESISTOR >	
JR001	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR002	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR003	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< TRANSFORMER >	
PT001	8-729-907-25	TRANSISTOR PT4850F	
PT002	8-729-907-25	TRANSISTOR PT4850F	
		< RESISTOR >	
R001	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R002	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R003	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R004	1-216-190-00	METAL GLAZE 470 5% 1/8W	
		< SWITCH >	
S001	1-692-497-11	SWICH, PUSH (TAPE 8/9)	
S002	1-692-497-11	SWICH, PUSH (TAPE 10/13)	
S003	1-692-497-11	SWICH, PUSH (ME/MP)	
S004	1-692-497-11	SWICH, PUSH (HI8 MP)	
S005	1-692-497-11	SWICH, PUSH (REC PROOF)	
S006	1-570-953-11	SWITCH, PUSH (1 KEY) (CC DOWN)	

****

MISCELLANEOUS
****

Ref.No.	Part No.	Description	Remark
803	1-691-471-11	CONNECTOR, TRANSLATION 11P	
804	1-649-565-11	FP-696 FLEXIBLE BOARD	
825	※	DRUM ASSY	
866	1-692-498-11	SWITCH, ROTARY	
891	1-750-620-11	CONNECTOR (MM8 MD)	
M901	※	DRUM ASSY	
M902	X-3942-946-1	MOTOR ASSY, CAM	
M903	8-835-499-01	MOTOR, DC SCE-0501A	

****

****

HARDWARE LIST

****

Ref.No.	Part No.	Description	Remark
#1	7-682-645-01	SCREW +PS 3X4	
#2	7-621-772-08	SCREW +B 2X3	
#3	7-688-003-01	W 3, SMALL	
#4	7-628-253-15	SCREW +PS 2X5	
#5	7-688-001-01	W 2, MIDDLE	
#6	7-627-853-57	PRECISION SCREW +P 2X5 TYPE3	

8 mm Video MECHANICAL ADJUSTMENT MANUAL V

F MECHANISM

CORRECTION-1

Correct your MECHANICAL ADJUSTMENT MANUAL V as shown below.

Subject:

1. Change of Mounting and Removal of FL Worm Wheel
2. Change of Disassembly Figure, Parts

4-26. FL WORM WHEEL (Fig. 33)(Page 33)

1. Removal

1) Disengage tabs Ⓐ at four places and remove the gear cover ①.
2) Remove the FL worm wheel ②.

2. Mounting

1) Mount the FL worm wheel ②.
2) Meeting the hole Ⓓ in drive gear with the hole in side plate, mount the FL worm wheel ② while meeting the hole Ⓒ in FL worm wheel with the hole in side plate.
3) Mount the gear cover ①.

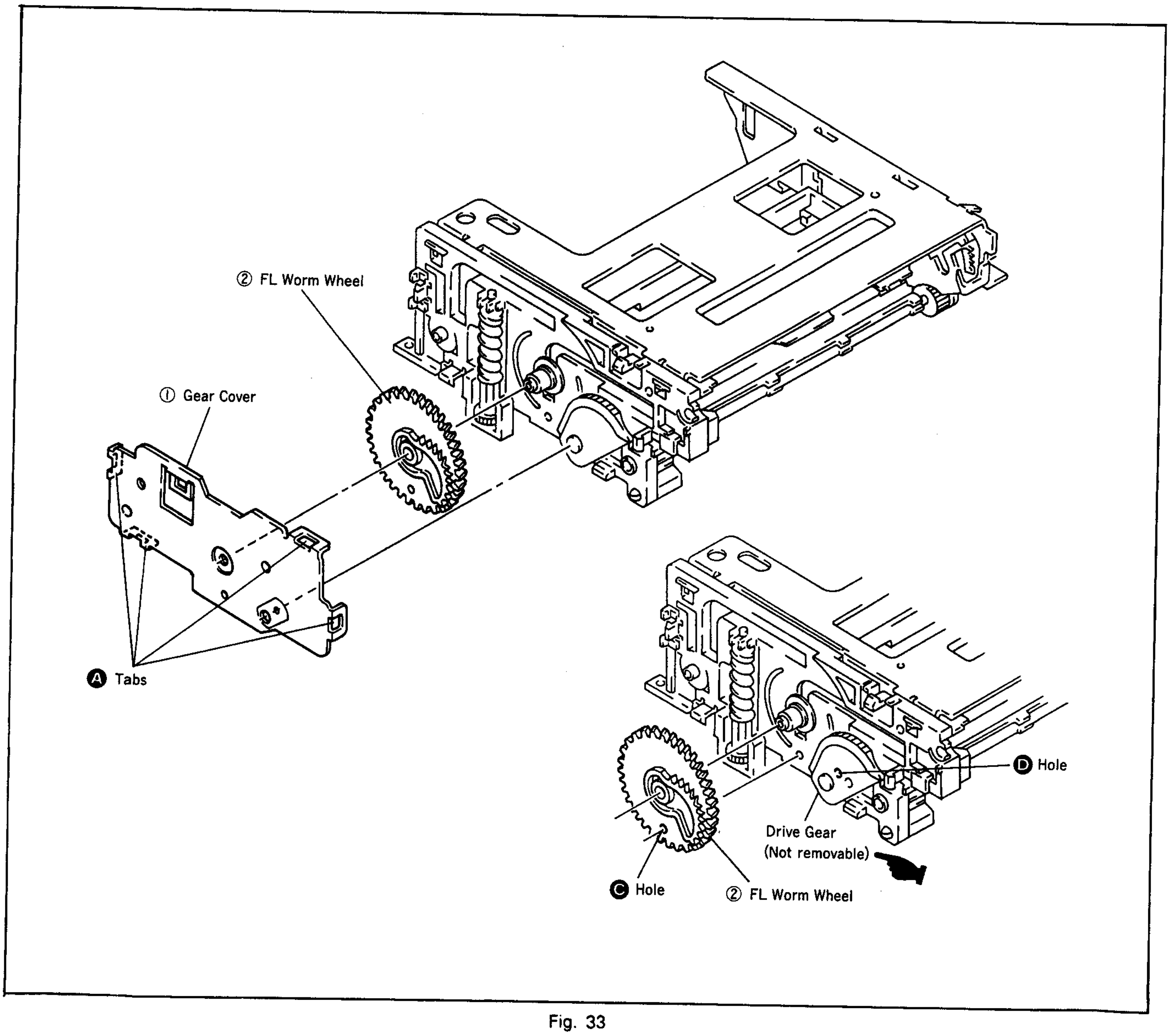
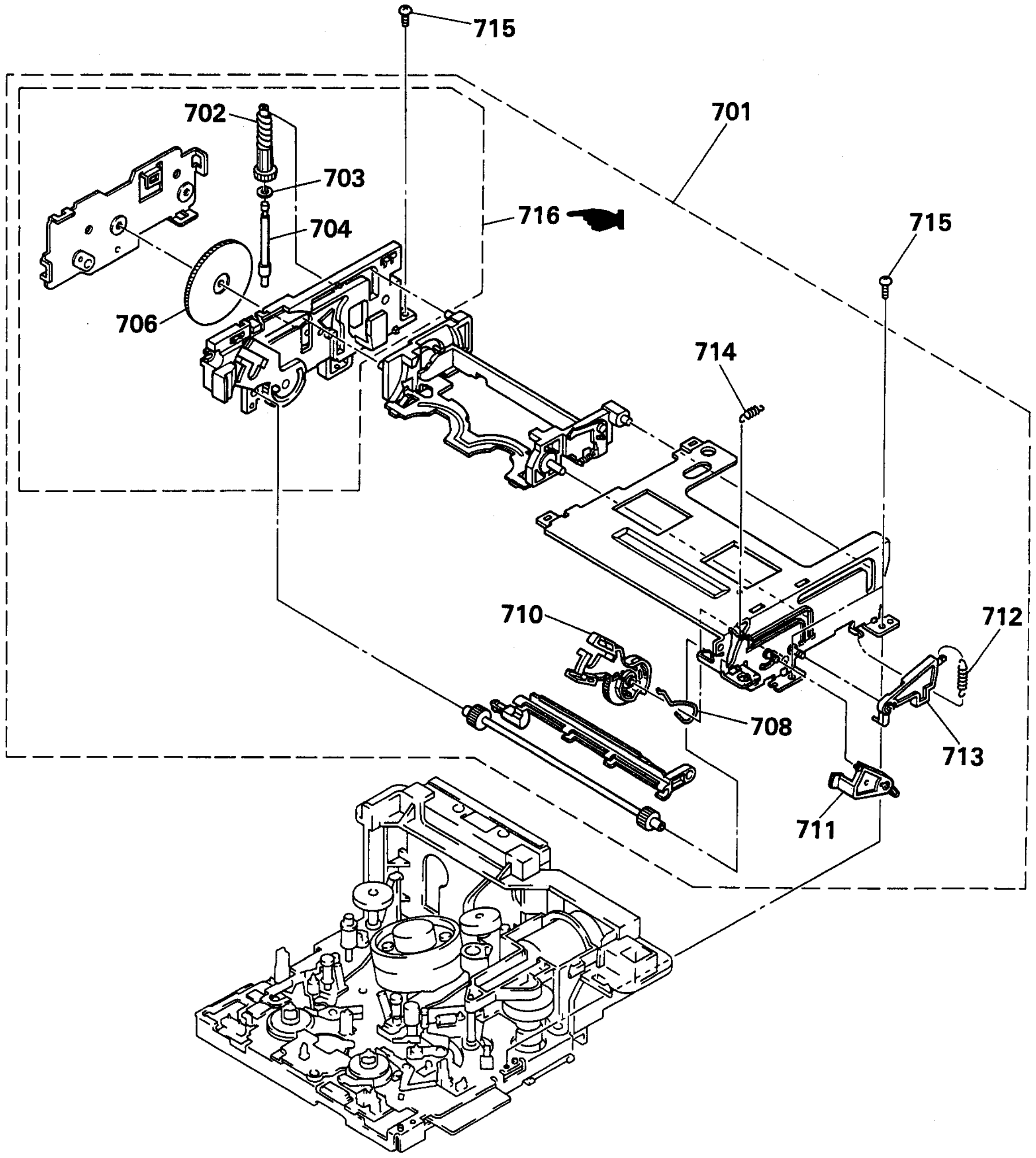

② FL Worm Wheel
① Gear Cover
Ⓐ Tabs
Ⓓ Hole
Drive Gear
(Not removable)
Ⓒ Hole
② FL Worm Wheel

Fig. 33

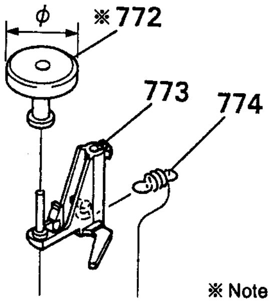
☛ : Indicates Corrected portion

6-1. FRONT LOADING ASSEMBLY (Page 39)



Ref. No.	Part No.	Description	Remark
701	A-7091-941-A	FL BLOCK ASSY	
702	3-954-028-01	GEAR, FL WORM	
703	3-738-212-11	RETAINER, THRUST, REEL TABLE	
* 704	3-954-029-01	SHAFT, FL WORM GEAR	
706	3-954-019-01	WHEEL, FL WORM	
708	3-954-042-01	SPRING, PRESS	
710	3-954-033-01	ARM (T), DRIVING	
* 711	3-954-041-01	ARM, DOOR SWITCHING	
712	3-954-043-01	SPRING, TENSION	
* 713	3-954-040-01	ARM, CASSETE IN SWICH	
714	3-954-044-01	SPRING, TENSION	
715	3-732-817-01	SCREW (2X4.5), TAPPING	
716	A-7091-942-A	PLATE (S), SIDE ASSY ☛	

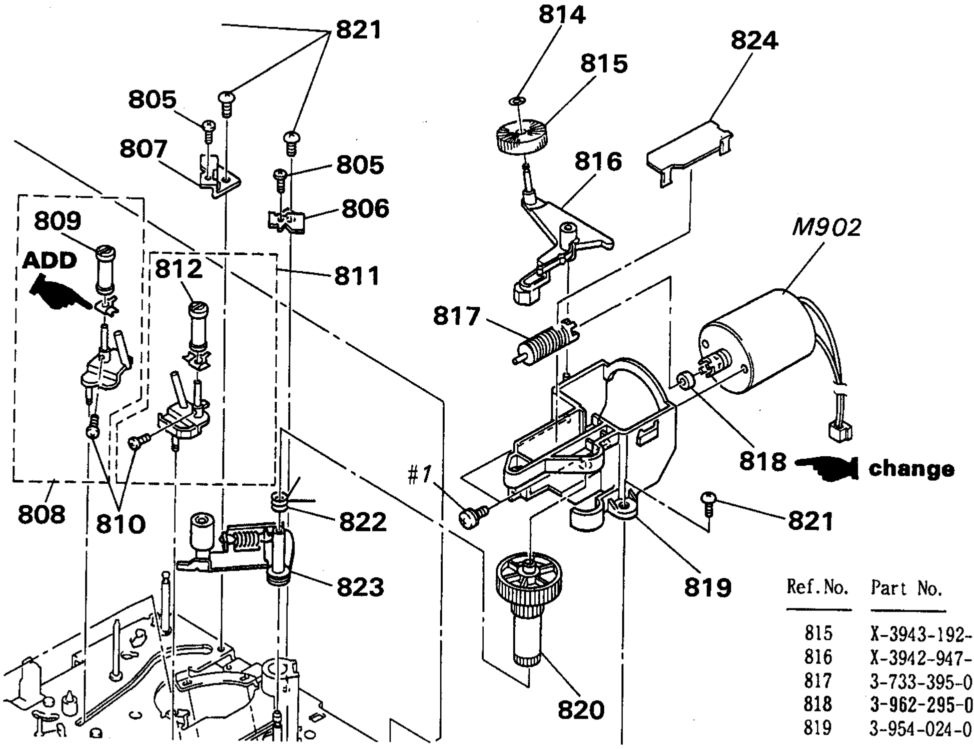
6-2. MD CHASSIS ASSEMBLY (1) (Page 40)



※ Note that there are two kinds of impedance roller (M) weights whose diameters are as follows.
NTSC model : ϕ19
PAL model : ϕ10

Ref.No.	Part No.	Description	Remark
768	3-726-882-02	FLANGE, LOWER, TG2	
769	3-726-885-01	SLEEVE, TG2	
770	3-726-883-31	ROLLER, TG2	
771	3-726-884-01	FLANGE, UPPER, TG2	
772	3-954-282-01	ROLLER (M NTSC), IMPEDANCE	☛
772	3-962-051-01	ROLLER (M PAL), IMPEDANCE	☛ ADD
773	X-3943-015-1	BASE ASSY, ROLLER	
774	3-954-284-01	SPRING, TENSION	
775	3-954-096-01	SCREW, TG7 HEIGHT ADJUSTMENT	
776	3-954-093-01	SPACER, TG7	
777	X-3942-958-1	ARM ASSY, TG7	
778	3-954-003-01	SPRING (TG7), TORSION	
779	X-3943-161-1	BRAKE (T) ASSY	
780	3-953-978-01	SPRING, TENSION	
781	3-732-817-01	SCREW (2X4.5), TAPPING	
782	3-738-212-11	RETAINER, THRUST, REEL TABLE	
783	3-669-465-00	WASHER (1.5), STOPPER	

6-3. MD CHASSIS ASSEMBLY (2) (Page 41)



Ref.No.	Part No.	Description	Remark
815	X-3943-192-1	ROLLER ASSY, HC	
816	X-3942-947-1	ARM ASSY, HC	
817	3-733-395-01	GEAR (CAM), WORM	
818	3-962-295-01	RUBBER, JOINT	☛
819	3-954-024-01	HOLDER, MOTOR	
820	3-954-023-01	WHEEL, CAM WORM	
821	3-732-817-01	SCREW (2X4.5), TAPPING	
822	3-954-105-01	SPRING (PINCH DRIVING)	
823	X-3942-945-1	ARM ASSY, PINCH	
824	3-958-047-02	MOTOR HOLDER COVER	
825	※	DRUM, UPPER, ROTARY	
M901	※	DRUM ASSY	
M902	X-3942-946-1	MOTOR ASSY, CAM	

Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

English
94J18113-1

©1994.10

Published by Personal A&V Products Div. Quality Engineering Dept.

8mm Video MECHANICAL ADJUSTMENT MANUAL V

F MECHANISM

video 8

CORRECTION-2

Please correct your 8mm Video MECHANICAL ADJUSTMENT MANUAL V.

Subject : 5-2. TRACKING ADJUSTMENT

(97-005)

8mm Video MECHANICAL ADJUSTMENT MANUAL V

Page 36

Incorrect

5-2. TRACKING ADJUSTMENT (Fig. 37, 38)

1) Play back the tracking alignment tape.
2) Loosen the No. 3 guide (TG3) lock screw ① and turn the No. 3 guide to flatten the waveform at the inlet.
3) Tighten the No. 3 guide (TG3) lock screw ① to lock the No. 3 guide.
4) Loosen the No. 6 guide (TG6) lock screw ② and turn the No. 6 guide to flatten the waveform at the outlet.
5) Tighten the No. 6 guide (TG6) lock screw ② to lock the No. 6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

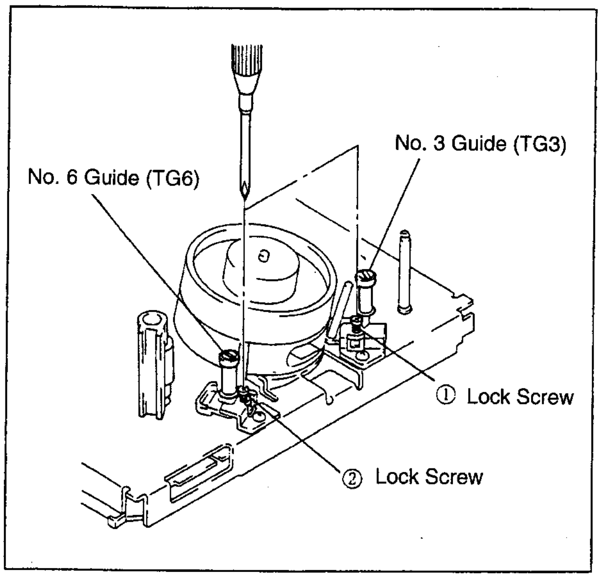

No. 3 Guide (TG3)
No. 6 Guide (TG6)
① Lock Screw
② Lock Screw

Fig. 37

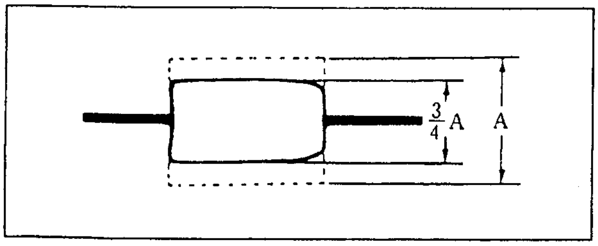


Fig. 38

Correct

5-2. TRACKING ADJUSTMENT (Fig. 37, 38)

1) Play back the tracking alignment tape.
2) Turn the No. 3 guide to flatten the waveform at the inlet.
3) Turn the No. 6 guide to flatten the waveform at the outlet.

Note : Be careful not to touch the lock screw.

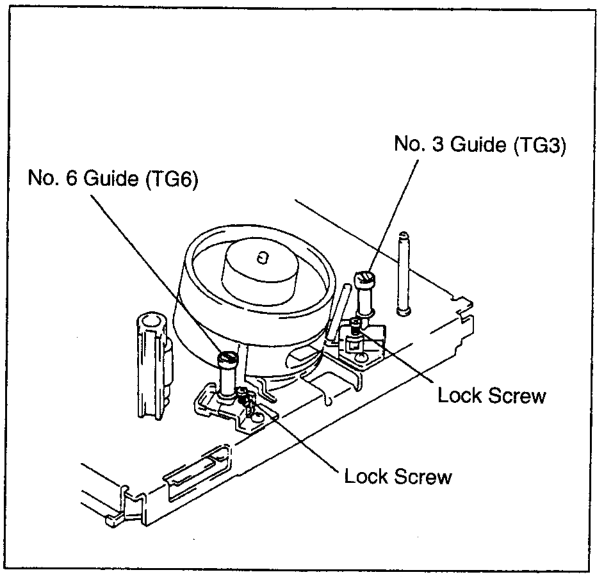

No. 3 Guide (TG3)
No. 6 Guide (TG6)
Lock Screw
Lock Screw

Fig. 37

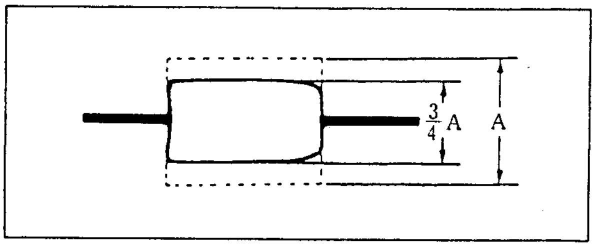


Fig. 38